NATUR CYMRU
Nature of Wales

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- Road to nowhere?
- Amphibians
- Shingle ridges
- Morfa Glaslyn
- High Brown Fritillaries
- Natural Environment Framework
- Specklebelly lichens
- Books, News, Comment...

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Nature of Wales

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Natur Cymru is intended to promote the exchange of information about biodiversity and encourage debate. If you have information, ideas for articles or artwork which you think might be of interest to readers, please contact the Editor.

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NATUR CYMRU GOLYGYDDOL

Rydw i'n lwcus iawn o gael darn bendigedig o dir i ofalu amdano. Ond mae gwneud yr hyn sydd o fudd i'r amgylchedd ar fy fferm fach yn anodd, ac yn groes i unrhyw fanteision economaidd yn aml. Yn y blynyddoedd diwethaf, mae Llywodraeth y Cynulliad wedi llunio sawl dogfen yn sôn am ffermio a'r amgylchedd. Ond er gwaetha'r syniadau gwych, dydyn nhw ddim wedi ein hwyluso i ffermio er budd natur. Efallai y bydd fframwaith newydd Llywodraeth y Cynulliad ar gyfer yr amgylchedd, a'r ddogfen ymgynghori 'Cymru Fyw', yn wahanol yn hyn o beth.

Mae'r fenter yma'n nodi rhai egwyddorion pwysig – yn sicr, mi ddylen ni gnoi cil yn ofalus drosti. A fydd gwerth y gwasanaethau mae natur yn eu cynnig – sef 'gwasanaethau ecosystemau' – yn cael ei dderbyn ym mhob rhan o'r Llywodraeth? Gobeithio y bydd erthygl Mike Alexander yn symbylu eraill i ymateb i'r ddogfen. Mae'r fframwaith wedi'i ddisgrifio fel cyfiawnhad dros ad-drefnu'r sector amgylcheddol statudol. Os bydd yn llwyddo i wneud hyn heb dorri'r gyllideb, gan sicrhau y bydd Cymru a'i hamgylchedd ar eu hennill ac y bydd gennym asiantaeth amgylcheddol statudol o'r radd flaenaf, mi ddylai pob un ohonom lawenhau.

Er bod y Strategaeth Amgylcheddol ar gyfer Cymru, a lansiwyd bedair blynedd yn ôl, yn ddogfen o fath gwahanol, y gobaith oedd y byddai'n rhoi stop ar golli bioamrywiaeth, yn lleihau ôl troed ecolegol Cymru ac yn cael gwared â'n holl helbulon amgylcheddol. O weld y creithiau sy'n anharddu canolbarth Cymru yn unswydd er mwyn tynnu rhai munudau oddi ar siwrneiau modurwyr, go brin ei bod wedi newid hen syniadau ynglŷn â chynnydd economaidd. Darllenwch erthygl Julian Jones ynglŷn â'r cynllun cwbl amhriodol yma, a digalonnwch.

Os mai gwir nod polisïau cyhoeddus Cymru yw bod o fudd i'r cyhoedd, dylai dyfodol stad ysblennydd Llyn Efyrnwy fod yn gwbl ddiogel. Ond fel y dywed Delyth Willis, gwleidyddion y tu allan i Gymru fydd â'r gair olaf ynglŷn â gwerthu'r Stad – rhywbeth a allai godi nyth cacwn. Rhaid inni ddisgwyl a gweld a fydd dyheadau'r RSPB yn cael eu gwireddu, ai peidio.

Diolch i'r drefn, mae'r cadarnle olaf ar gyfer brithegion brown yn llwyddo i ddal ei dir, ys dywed Russel Hobson a Richard Smith. Yn rhannol oherwydd gwahaniaeth rhwng polisïau coetiroedd a pholisïau tiroedd fferm, mae hoff gynefin y glöyn byw yma – sef cymysgedd o goed a thir agored – yn prinhau. Yn aml, mae bywyd gwyllt yn ffynnu mewn cymysgedd o gynefinoedd. Fel y dywed Ziggy Otto, mae amffibiaid yn byw rhwng dau fyd gwahanol – dŵr a thir sych. Mae Ivor Rees yn ein tywys i fyd marianau, sy'n gorwedd rhwng y tir a'r môr – dyma lefydd a gaiff eu hanwybyddu'n aml, ond maen nhw'n bwysig i fywyd gwyllt. Ddwy ganrif yn ôl, roedd y môr yn ymestyn ymhellach o lawer i'r tir na Phorthmadog, ond arweiniodd Cob William Maddocks at newid siâp yr arfordir am byth. Ac yn ôl Twm Elias, mae bywyd gwyllt wedi ffynnu yn sgil y cyfleoedd newydd a ddaeth i'w rhan.

Y flwyddyn nesaf, byddwn yn dathlu ein pen-blwydd yn ddeg oed ac rydw i'n edrych ymlaen at ddychwelyd at rai straeon a gafodd eu cynnwys yn y rhifynnau cyntaf, er mwyn dathlu llwyddiannau amgylcheddol o bwys. Ond os na allwn ddathlu, gobeithio ein bod wedi dysgu gwersi pwysig. Hefyd, bydd yn gyfle da inni edrych ar sialensiau'r dyfodol yn llawn brwdfrydedd.

James Robertson

NATUR CYMRU EDITORIAL

I am extremely lucky to have a wonderful piece of land to look after, but doing the right thing for the environment on my small farm is difficult and often runs against the grain of economic self-interest. The Welsh Assembly Government (WAG) has produced various documents in recent years to chart a better course for farming and the environment, but for all their splendid sentiments, they haven't made it any easier to farm with nature in mind. Perhaps WAG's new framework for the environment, and its consultation document, called 'A Living Wales', will be different.

This initiative sets out some important and forward-looking principles, and deserves to be taken seriously. Will it mean that the hard value of the 'ecosystem services' which nature provides becomes accepted across Government? I hope the article by Mike Alexander will galvanise others to respond to the document while it is still open for comment. I have heard the framework being called 'A justification for reorganising the statutory environmental sector.' If it does this without budget cuts, leaving Wales and the Welsh environment the winner, with a first class statutory environmental agency, we should all applaud.

Although a different kind of document, the Environment Strategy for Wales, launched four years ago, seemed to promise a halt to biodiversity loss, a reduction in Wales' ecological footprint and, you might wonder, the abolition of all environmental ills.

Liz Fleming-Williams

Wood pasture, June 2009.... and March 2010

I fear it has made little difference to old notions of economic progress, judging by the scars which now cut across mid-Wales in the interests of saving a few minutes for motorists. Read Julian Jones' account of this inappropriate road scheme and weep.

If public policy in Wales is genuinely geared to delivering environmental benefits for the public, then the future of the magnificent landscape that constitutes Lake Vyrnwy Estate should be safe. Yet as Delyth Willis points out, the final decision on the sale of the Estate will lie with politicians outside Wales, an anomaly which could stir up a hornet's nest. We will have to wait and see whether the RSPB's ambitions will be realised.

Our last remaining stronghold for High Brown Fritillaries is, thankfully, a success story, as Russel Hobson and Richard Smith report. Thanks partly to a policy divide between woodland and farmland, the habitat favoured by this butterfly - a mix of trees and open ground - has become increasingly scarce. Often wildlife thrives in a mix of habitats. Amphibians straddle two different worlds, one aquatic and terrestrial, as Ziggy Otto describes. Ivor Rees takes us on an exploration of shingle ridges, which stand between land and sea, and provide an often overlooked niche for wildlife. Two hundred years ago the sea encroached inland far beyond what is now Porthmadog, but William Maddocks' Cob changed the shape of that piece of coast. Over time wildlife has thrived in the new opportunities which this radical engineering project has brought, as Twm Elias tells us.

Next year we will be ten years old. I look forward to revisiting some of the stories we carried in our first issues and, where possible, celebrating significant environmental achievements. Where it is not possible, there will at least be useful lessons to learn. It will also be a good time to look forward with enthusiasm to the challenges ahead.

James Robertson

Liz Fleming-Williams

We're on a Road to Nowhere?

The distinctive character of much of Wales, with its mountain blocks and deep valleys, means that straight linear roads are hard to fit in. Road transport solutions which are appropriate for other places may make little sense here, and imposing them can do terrible environmental damage. Political claims to be creating a sustainable future for Wales look hollow in the face of a road-building scheme in mid-Wales, as JULIAN JONES reports.

The march of progress?

When I moved from Brecon to Radnorshire in 1998 I experienced something of a culture shock. I had been renting part of a converted barn near Llandefalle Common with superb views towards Hay Bluff, where you were much more likely to see a great grey shrike on its autumn migration than passing traffic. However, in Radnorshire my environs were quite different.

With hindsight I could have stayed in Brecknock and commuted to Llandrindod to continue developing the Powys Wildlife Sites System. However, I had a firm belief that I should live within the community where I work – a view I hold to this day. I packed up the table my Great Uncle Frank constructed after returning from the Dardanelle Straits in 1915 and loaded this family heirloom into the Brecknock Wildlife Trust trailer; cramming the rest of my worldly

possessions into an old Ford Escort, I embarked for Radnorshire.

I arrived at my new home in less than half an hour: a ground floor flat alongside the A470 between Builth Road and Newbridge-on-Wye. My accommodation was on a sharp bend in this trunk road – a section known as the 'Smithfield bends' – and you had to be quite careful as you drove in or out of the place, but it was a lot cheaper than Brecon and I was 'broke'.

Getting used to the road

Soon after moving in, there was quite a serious accident on 'the bend', involving a tanker and the spillage of liquids that could have contaminated the nearby River Wye and one of its tributaries, the Dulas Brook – a most important stream for white-clawed crayfish and one of the principal reasons for its Special Area for Conservation (SAC) status.

There were other accidents along this road between Builth and Newbridge, but most of these were minor and, for local people at least, the winding road was part of life in this beautiful part of the upper Wye valley. Within a five mile radius of my new home were 13 Sites of Special Scientific Interest, and the Cors-y-Llyn National Nature Reserve (NNR) was a stone's throw away. It was a very special place and I felt privileged to live there.

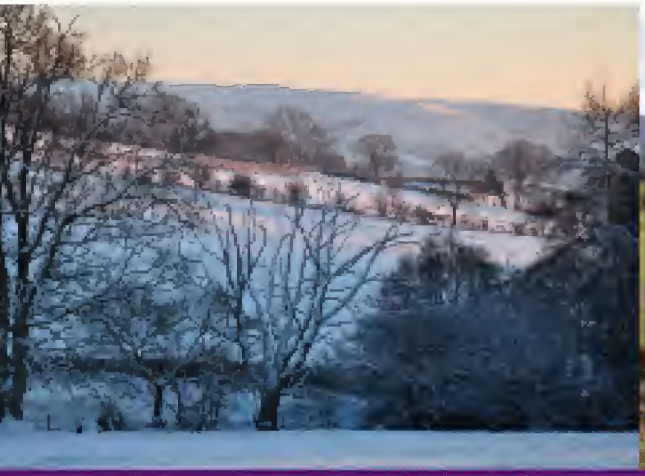
After a year my landlords sold up and I had to move on, but I was soon back in Newbridge-on-Wye for a different reason. As Conservation Officer of Radnorshire Wildlife Trust I attended a public meeting convened by the recently formed 'National Assembly' to discuss proposals for a by-pass of Newbridge-on-Wye. For some of us 'by-pass' instantly conjures up images of Newbury, 'Swampy' and a 3mm whorled snail, but having lived in the area I knew that for some people the daily chores of popping to the post office, picking up the kids from school, let alone entering your own front door could be made quite a task by the trunk road that ran through the village. So, even though it might cost many millions and cause great upheaval, maybe a by-pass would be good for local people?

Several options were put forward. For various reasons, including environmental and ecological concerns, most routes were rejected, but one was seen as being a possible way forward. The trouble was this didn't even by-pass Newbridge, but created a mighty new 'motorway' style road which ground to a halt just before the village. It would be a straight section of road with overtaking lanes, but it failed to tackle the main issue of the 'by-pass'. Radnorshire Wildlife Trust objected to plans for a new road in 2002; for a number of years things seemed to go quiet, but we now know that plans for a new road were moving forward all the time with the full support of the Welsh Assembly Government (WAG), Powys County Council and others.

Liz Fleming-Williams

Entrance to Newbridge on Wye

Photos: Liz Fleming-Williams



The *Lecanora* lichen host tree, centre foreground, in January 2010...

April..

Anyone listening?

In 2008 I attended a meeting of the Environmental Liaison Group for the proposed new road between Cwmbach and Newbridge-on-Wye. I was reassured by the presence of Environment Agency Wales and the Countryside Council for Wales and genuinely believed that we would be able to protect the wildlife interest threatened by the proposed route. In 2002 I had found an area of wetland at a place called 'Red House'. The mire vegetation here was dominated by Wood Club-rush *Scirpus sylvaticus*; it may not have fitted neatly into a National Vegetation Classification, but it was a most unusual fragment of semi-natural habitat.

WAG was made aware of the presence of lowland meadow of County Wildlife Site quality, the ancient trees that would be lost along with their epiphytes and internationally rare lichens, as well as the presence of Barbastelle and Lesser Horseshoe bats that were not detected by any surveys conducted by the ecological consultants. They were also informed of the historic presence of dormice although these were not found during the surveys.

The next stage is all a bit depressing really. Radnorshire Wildlife Trust was joined by other environmental organisations, including Plantlife, Coed Cadw and CPRW, in voicing opposition to the scheme. A few weeks before the Public Inquiry held in the summer of 2009, CCW withdrew their objection and from then on we appeared to be fighting an uphill struggle without any support from the statutory organisations.

During the Christmas holiday the Inspector's report was produced by WAG – a good time of year to 'bury bad news'. A few weeks later work commenced on this new section of the A470, with sections of ancient species-rich hedgerow and mature trees and blocks of woodland being some of the first casualties. It has been a nightmare for the people living along the route; the best thing you can say to them is that one day the works will end and you can start to re-build your lives.

Wildlife suffers

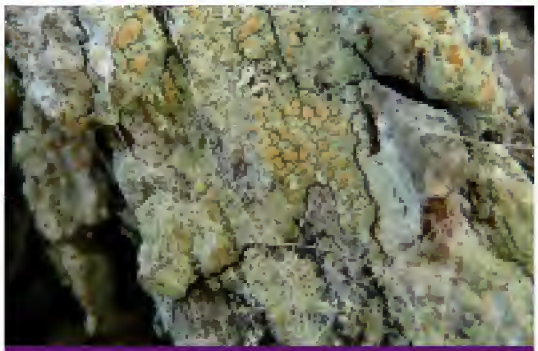
As for the wildlife, does it have a future? At the Public Inquiry the Planning Inspector was satisfied that more than enough had been done to mitigate for damage caused to biodiversity by the scheme. The Red House mire vegetation was translocated to a new site and only time will tell whether it can flourish in a new location. A dormouse nest was found in an old oak tree whilst it was being felled at Pont ar Ithon, but new planting may create better dormouse habitat – in the next 20 or 30 years.

Perhaps the greatest loss has been to the veteran trees and their rare lichens. Quoted in *BBC Wildlife*

...and in May.

All traces buried under tens of feet of embankment.

RG Woods



Lemon tart lichen *Lecanora sublivescens*

Magazine (September 2010), Ray Woods claimed that the road scheme has threatened the very future of the lemon tart lichen *Lecanora sublivescens* by felling one of its host trees and removing others that could have provided a future habitat for this internationally scarce species.

The Welsh Assembly Government claim that the 5.6km of new road between Cwmbach and Newbridge-on-Wye is vital if they are to achieve better road links between north and south Wales, but for a government that is apparently committed to a sustainable future for Wales it seems a very heavy price to pay. With a final price tag as high as £17,000 per metre length of road built – all to save three minutes on a road journey – it is a financial as well as ecological burden that future generations will have to cope with.

***Julian Jones** is Manager of the Radnorshire Wildlife Trust. www.rwtwales.org 01597 823298*

Llef yn llefain...

Beth yw canlyniadau cynlluniau ffyrdd yng Nghymru? Cynnydd neu chwalfa? Profiad digalon i naturiaethwyr lleol yn Sir Faesyfed oedd ceisio brwydro cynllun i adeiladu ffordd newydd yn y Bontnewydd-ar-Wysg. Rhannwyd gwybodaeth gyda'r Llywodraeth am fywyd gwyllt hynod yr ardal a fyddai'n cael ei andwyo gan y ffordd ond ni chafodd y diddordeb hwn ei adlewyrchu yn y trafodaethau a'r penderfyniadau. Ac wedi i Gyngor Cefn Gwlad Cymru dynnu nôl ei wrthwynebiad i'r cynllun roedd hi'n anodd iawn i fudiadau gwirfoddol gynnal y frwydr.

Daeth yr ymchwiliad cyhoeddus i'r casgliad bod digon o argymhellion yn y cynllun i leihau neu wneud iawn am golledion bywyd gwyllt – fel symud cynefinoedd anghyffredin a phlannu o'r newydd i gymryd lle'r gwrychoedd hynafol. Efallai mai diflaniad y coed hynafol unigol â'u cennau prin yw'r golled fwyaf. Go brin y gellir ail-greu'r cyfoeth hwn. Gallai cost terfynol y ffordd 5.6km fod yn £925 miliwn. A all llywodraeth sydd wedi ymrwymo i greu dyfodol cynaliadwy i Gymru gyfiawnhau hyn? O ystyried y distryw amgylcheddol a ydyw'n bris rhy uchel i'w dalu er mwyn arbed 3 munud ar siwrnai?

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Morfa Glaslyn

dau can mlynedd ers adeiladu'r Cob

Morfa Glaslyn a'r Wyddfa / Morfa Glaslyn and Snowdon

Mae'n ddwy ganrif bellach ers i'r Cob gael ei adeiladu gan William Maddocks ar draws Aber y Glaslyn. Bu dylanwad y datblygiad hwn ar dirwedd, byd natur, economi a chymdeithas yr ardal yn anferthol a phellgyrhaeddol.

***TWM ELIAS** sy'n disgrifio'r newidiadau mawr a welwyd nôl yn y 19eg G ac yn egluro'r newid sy'n dal i ddigwydd hyd heddiw o ganlyniad i brosesau dynamig afon mewn aber gaeth.*

Yn lle cocos bydd tatws

Cyn adeiladu'r Cob, 200 mlynedd yn ôl, mae'n rhaid y byddai'n olygfa anhygoel i weld y môr ar benllanw yn ymestyn yr holl ffordd i Aberglaslyn, sydd bron 5 milltir i'r tir, ac yna'r miloedd o aceri o laid a thywod ddeuai i'r golwg pan fyddai'r dyfroedd wedi cilio. Roedd yn aber beryglus iawn a dim ond ar y trai, a heb lif mawr yn yr afon, y byddai'n saff i'w chroesi.

Pan adeiladodd William Maddocks, a roddodd ei enw ar Dremadog a Phorthmadog, ei forglawdd mawr, sef Y Cob, yn 1811, fe newidiodd y fro am byth. Dyma ddywedodd Dafydd Siôn James am hyn yn 1813:

> Yn lle cocos bydd tatws,
> A merlod lle bu'r morloi. [1]

Llwyddwyd i ennill miloedd o aceri o dir i'w ffermio a

chreu ffordd newydd i gysylltu hen siroedd Caernarfon a Meirionnydd. Cyn bo hir adeiladwyd tramffordd o chwareli Blaenau Ffestiniog i gario llechi i longau yn harbwr newydd Porthmadog i'w cludo i bedwar ban byd. Buan y datblygodd diwydiant adeiladu llongau yma – llongau hwyliau bychan tri-mast enwog Porthmadog a chafodd hynny gryn effaith ar reolaeth coedydd derw cynhenid y fro. Cynyddodd gwerth a defnydd masnachol y coedydd yn sylweddol a phlannwyd sawl planhigfa newydd yn hanner ola'r 19eg ganrif, megis Coed y Borth ger Borth y Gest. Mae'r safle hwn bellach yn warchodfa natur leol o dderw talsyth tua 120 mlynedd oed.

Y cynefinoedd gafodd eu heffeithio leiaf, o bosib, yn sgîl adeiladu'r Cob oedd y coedydd derw a bedw ar y cribau creigiog sy'n sefyll, yma ac acw, uwchlaw'r caeau gwastad. Ynysoedd oedd y rhain ar un adeg, fel y tystia eu henwau: Ynysfor, Ynys Ferlas ac Hir Ynys ac yn y blaen. Maent o ddiddordeb oherwydd amrywiaeth y cennau a'r bryoffytau sy'n tyfu ar hyd canghennau'r coed.

Datblygiad diwydiannol

Anodd credu erbyn heddiw cymaint o ddatblygiad economaidd welodd ardal Morfa Glaslyn drwy'r 19eg ganrif. Deuai copr o ardal Nant Gwynant i'w allforio drwy Borthmadog ac roedd chwareli llechi sylweddol, a'u rheilffyrdd cysylltiedig, yn darparu llechen lwyd o Flaenau Ffestiniog a Chwm Croesor ar ochr Merionnydd yr Afon Glaslyn ac o Gymoedd 'Stradllyn a Phennant ar ochr Sir Gaernarfon [2, 3].

Caiff y naturiaethwr ei atgoffa o brysurdeb y fasnach lechi ryngwladol mewn ffyrdd annisgwyl. Dywedir y byddai, hyd tua canol yr 20fed ganrif, nifer o blanhigion estron wedi sefydlu ar yr Ynys Balast ger ceg yr harbwr. Ystyrir bod melyn yr hwyr, Oenothera (agg.), a welir ar y Cob ac yr ardal Borth y Gest wedi cyrraedd yma o America ym malast y llongau hwyliau, fel y gwnaeth hefyd y lleidlys Cymreig, Limosella australis, o arfordir gogledd ddwyrain yr Unol Daleithiau, ac a welir mewn pyllau mwdlyd ar rannau o'r morfa [4]. Gwaetha'r modd gorchuddiwyd yr ynys â llwyni trwchus erbyn hyn ac nid oes tystiolaeth ddiweddar o oroesiad mewnfudwyr balast eraill.

William Maddocks

Cynnyrch arall Ynys Balast yw cerrig adeiladu – rhai o bellafoedd byd. Ac am y byddai'r 'hen bobol' yn gwarafun gwastraffu unrhyw beth defnyddiol, cludwyd rhai ohonynt i adeiladu Pont Britannia (pont yr harbwr) gerllaw ac yn gerrig addurniadol ar rai o adeiladau'r Stryd Fawr.

Defnydd tir

Y tiroedd amaethyddol: Law yn llaw â'r gweithgarwch diwydiannol hwn bu cryn ddatblygu amaethyddol wrth i'r galw am fwyd gynyddu fel y tyfai poblogaeth drefol a diwydiannol y wlad. Hyd yn oed cyn adeiladu'r Cob roedd rhannau o'r morfa eisoes wedi eu hadennill – yn cynnwys tua 1,000 o aceri a gafodd eu gwella gan William Maddocks ei hun yn ardal Tremadog ar droad y 19fed ganrif a thiroedd eraill yn ardal Llanfrothen a mannau eraill a gafodd eu hadennill gan nifer o dirfeddianwyr lleol rhyw hanner canrif a mwy ynghynt [1].

Er mwyn creu tir cynhyrchiol o'r morfa ar ôl codi'r Cob adeiladwyd cloddiau pridd y naill ochr i'r Afon Glaslyn a'r nentydd a wagiai iddi, a chyfres o ffosydd dyfnion a phibellau clai yn y caeau i ddraenio'r tir. Ennillwyd llawer o diroedd da, er y byddai rhannau helaeth ohono yn dueddol o fod yn wlyb am gyfnodau

Trevor Williams

Alarch y Gogledd / Whooper swan

dros y gaeaf. O ganlyniad ychwanegwyd yn sylweddol at diroedd rhai o'r ffermydd cyfagos a sefydlwyd un fferm fawr newydd, â'r enw addas Tŷ Newydd Morfa arni. Pery'r ffosydd yn goridorau cysylltiol pwysig i fywyd gwyllt hyd heddiw er eu bod, ers diwedd y 1990au, yn dioddef ymlediad jac y neidiwr neu'r ffromlys chwarennog *Impatiens glandulifera*.

Mae'r amaethdir lled ddwys ar y morfa, fel ag y gwelir er enghraifft rhwng Llanfrothen a Phont Traeth (ger Prenteg) o ddiddordeb adaryddol. Dros y gaeaf daw haid o 40 – 80 o elyrch y gogledd i bori ar y gwastadeddau ac yn ystod yr haf, ym mhen ucha'r morfa, mae un o'r ychydig barau o weilch y pysgod sy'n nythu yng Nghymru wedi llwyddo magu yma bob blwyddyn ers 2004.

Y Morfa Gwyllt: Gan y byddai'r Afon Glaslyn yn aml yn gorlifo'r tir rhwng y Cob a rheilffordd y Cambrian (a adeiladwyd yn 1867), yn ogystal â rhywfaint o dir yn uwch i fyny'r morfa, nid oedd diben rheoli'r afon na thrin y tir fel a wnaed yn mhen ucha'r morfa. Yr unig reolaeth amaethyddol a welwyd yn yr ardaloedd hyn, felly, oedd rhywfaint o bori gan wartheg a defaid yn yr haf. O'r cychwyn cydnabuwyd bod gwerth arall heblaw amaethyddiaeth i'r tir corsiog lled ansefydlog hwn, sef i saethu hwyaid yn y gaeaf.

Mae'r rhan yma o'r morfa yn dal yn hynod bwysig i hwyaid ac adar eraill y gwlyptir hyd heddiw. Dros y gaeaf bydd yn un o nifer o lecynnau cysgodol drwy aberoedd y Glaslyn a'r Ddwyryd, a chyn belled â chorsydd morfa Harlech, lle bydd adar yn clwydo neu lochesu ynddynt. O bryd i'w gilydd yn y gaeaf, pan geir cyfuniad o lanw uchel a thywydd stormus, daw hyd yn oed rhai hwyaid y môr ac adar eraill sy'n fwy cysylltiedig â cheg yr aber yma, yn cynnwys trochyddion a gwyachod, er mwyn cysgodi y tu ôl i'r Cob [5].

Erbyn heddiw mae rhannau gwlyb y Morfa Gwyllt yn gynefin gwerthfawr i blanhigion prin megis y lleidlys Cymreig (dim ond mewn tri man arall y'i ceir yn Ewrop); yr ysbigfrwynen fach *Eleocharis parvula* a'r frwynen lem *Juncus acutis*. Ar laswelltir niwtral, ym mhen de-ddwyreiniol y morfa, ceir nifer o blanhigion prin eraill sy'n nodweddiadol o ddolydd gwlyb. O ddiddordeb arbennig yma mae'r carwy droellennog *Carum verticillatum*; tegeirian-y-gors llydanddail Cymreig *Dactylorhiza majalis*, is rh. cambrensis a'r melyn-yr-hwyr mân-flodeuog *Oenothera cambrica*[6].

Cynefin arall pwysig yma yw'r gwernogydd. Ceir un o goedlannau llifwaddodol gwlyb mwyaf Cymru ar Forfa Glaslyn ac maent o bwysigrwydd Ewropeaidd. Coed gwern aeddfed sydd fwyaf cyffredin yma ynghyd â rhywfaint o helyg llwyd a choed eraill yn y rhannau sychaf [6]. Prin iawn yw'r tarfu yma gan ddyn a'i anifeiliaid ac mae'n gynefin cyfoethog iawn o ran planhigion y gwlyptir ac yn arbennig o ran ei ddiddordeb entomolegol.

Newid cwrs yr afon

Os llwyddwyd i reoli llwybr yr Afon Glaslyn a'i chyfyngu i sianel rhwng cloddiau pridd sylweddol yn rhannau uchaf y morfa, ni thrafferthwyd gwneud hynny ar rannau gwyllt y morfa ger y Cob. Hyd heddiw, felly, gwelir newidiadau bychain ysbeidiol ym mhatrwm sianelau'r afon ger y Cob ac ymddangosodd ynysoedd newydd sylweddol yn ei rhan letaf ddiwedd y 1990au.

Cyn adeiladu'r Cob byddai llif yr afon, mewn gwrthdrawiad â llanw a thrai cyfnewidiol y môr, yn gyfrifol am newidiadau cyson (ac anghyson) ym

mhatrwm sianelau'r aber a dosbarthiad y gwelyau tywod a llaid. Bryd hynny nid oedd safle Porthmadog heddiw yn ddim ond tywod. Ond wedi gorffen y gwaith adeiladu a sefydlogi'r man lle'r arllwysai'r Afon Glaslyn drwy ddorau mawr pren ger Ynys Tywyn, llwyddodd grym llif yr afon i agor sianel newydd ddofn gydag ochr y graig - gan greu lle addas i longau. Yn 1821 cafodd William Maddocks yr hawl i godi harbwr a thref newydd a ddaeth yn adnabyddus fel Porthmadog [2].

Ers 200 mlynedd felly cyfyngwyd dihangfa'r afon o afael y Cob i un lle – heblaw rhwng 1812 ac 1814 pan fylchwyd y morglawdd gan stormydd. Cafodd hyn gryn effaith ar ddeinameg gweddill yr aber - yn cynnwys y Traeth Bach, sef yr ardal y mae'r Afon Dwyryd yn llifo drwyddi i ymuno â'r Glaslyn. Oherwydd nad oedd yr afon yn gallu nadreddu'n rhydd rhwng y naill ochr i'r aber a'r llall, wedi i'r brif sianel gael eu chyfyngu i ben gorllewinol y Cob, nid oedd rhannau eraill yr aber yn cael eu heffeithio i'r un graddau gan brosesau aberol. O ganlyniad, cychwynnodd y tywod gronni'n raddol mewn conglau cysgodol, megis rhwng y Cob a Thrwyn y Penrhyn ac ar ymylon de-ddwyreiniol y Traeth Bach lle mae'r morfa heli ar ochr ogleddol twyni Harlech yn graddol lenwi a sychu. Mae ceg yr aber, sef y rhan fwyaf grymus a deinamig ohoni, bellach yn mudo'n raddol allan i Fae Tremadog.

*Mae **Twm Elias** yn ddarlithydd a threfnydd cyrsiau ym Mhlas Tan y Bwlch, Canolfan Astudio Parc Cenedlaethol Eryri*

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Mike Alexander

Y Cob / The Cob

Glaslyn Marsh – 200 years on

In 1811 William Maddocks, who gave his name to Tremadog and Porthmadog, constructed a large sea wall across the Glaslyn estuary. Known as the Cob, this wall transformed a dangerous area of tidal waters and allowed the development of industry. Copper from Nant Gwynant and slate from Blaenau Ffestiniog were carried to the new harbour at Porthmadog and sent across the world, and a new road and the Cambrian railway connected the counties of Caernarfon and Merionnydd.

After construction, parts of the marsh were drained to provide thousands of acres of productive agricultural land, which in turn fed the rising population now working in industry. These drainage ditches still provide important wildlife corridors today.

The areas least affected were the oak and birch rocky ridges rising above the flat fields. Their names – Ynysfor, Ynys Ferlas and others – testify to their past (ynys is Welsh for 'island'), and they remain of interest for lichens and bryophytes.

Lower parts of the marsh continue to be flooded: originally valued for duck shooting, they now provide important sites for wetland birds, including whooper swans and osprey. In stormy weather even scoters and other marine birds will shelter behind the Cob. Several rare plants, such as Welsh mudwort (found in only three other places in Europe), whorled caraway and sharp rush, grow in the wetter areas. Alder marsh provides a rich habitat for many plant and insect species.

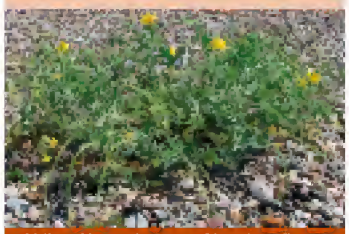
A full translation of this article is available on request.

All photos: Ivor Rees

Shingle - *its value for wildlife and ecosystem services*

Shingle beach at Abererch, Llŷn

Shingle beaches are fascinating places with their own unique flora and fauna. They also perform a great service, absorbing wave energy and protecting the coast from erosion. We should make full use of the ecosystem services they provide, argues ***IVOR REES.***



Yellow Horned-poppy *Glaucium flavum*

Shingle beaches may not have the immediate charisma of some other coastal habitats but such apparently harsh environments and the plants and animals colonising them have much intrinsic interest. Even without the biological interest, the shingle features around Wales have long been recognised for their geomorphological importance. Recognition of the dynamic functioning of such features is vital for understanding their ecology, but it is even more important given the interplay of rising sea levels and the role shingle plays in coast protection.

Wales has a legacy of settlements, roads and railways placed in the lee of, or even on top of shingle banks. Recent estimates are that sea level around Wales is rising at 3.1mm per year and revised predictions by the International Panel on Climate Change are of rises of 0.6–1.0m by 2100. Striking a balance between allowing the sea to adjust such natural features and imposing 'hard' engineering is one of the most challenging marine conservation issues of our times. In spite of the extent to which coastal geomorphology has featured on the educational syllabus, shingle ridges and storm beaches are perhaps the most misused coastal habitats.

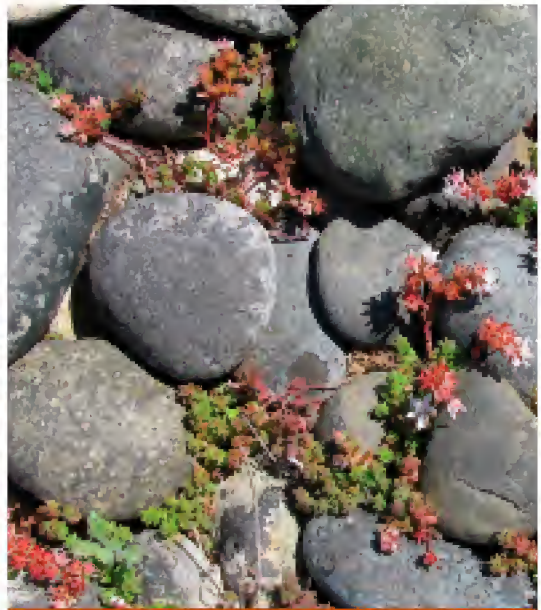
Shingle formation

Shingle banks and ridges are formed by the swash of storm waves throwing pebbles onto the crest well above the reach of normal waves. Owing to rapid percolation through the interstices, backwash is reduced, so wave action tends to be constructive. In storms shingle can be thrown to considerable elevations, thus the ridge generated by the sea can be several metres above the land behind it. In the extreme example at the Portland end of Chesil Beach, the crest is 13.3m above normal high tide and towers above a street of houses behind it.

Shingle stability and the availability of humus are key factors which permit succession from bare shingle to full vegetation. The first signs of relative stability come with the colonisation of the pebbles by lichens. Accumulation of humus is more erratic, as much of it ultimately comes from the strandlines of seaweed and other flotsam. Some plants that can cope with some instability thrive along strandlines, giving rise to lines of vegetation formed mainly of sea-beet *Beta maritima*, several oraches *Atriplex* spp. and curled dock *Rumex crispus*. Another factor is the availability of fresh water, allowing less salt-tolerant species to colonise. In addition to rainfall, day–night heating and cooling causes dew to form within the interstices between the pebbles.

Species

Vegetated shingle is quite a scarce Biodiversity Action Plan habitat around Wales. The total area in the whole Principality, as estimated by CCW, is only about 810 hectares. Put in context, sand dunes cover over 70 times as much. A particularly fine example occurs at Morfa Abererch on the south side of the Llŷn Peninsula. Here, as a result of long-shore drift, shingle has accumulated against a rock headland as a series of parallel ridges. Even the oldest ridges are still very sparsely vegetated. Up close the stable pebbles are seen to have been colonised by lichens, with English Stonecrop *Sedum anglicum* in the crevices between. Further out, spectacular clumps of Yellow Horned-poppy *Glaucium flavum* occur, with Sea Campion *Silene maritima* growing in patches. The sequence of colonisation can also be clearly seen on



English stonecrop *Sedum anglicum*

the shingle spit at Abermenai Point on Anglesey, where a veneer of sandy turf has developed over the stable shingle. Although such places remain relatively undisturbed, a disproportionate and unexplained number of shoreline specialist species have been lost or contracted their range in Wales since being noted in the diaries of visiting 18th century botanists. These include Cottonweed *Otanthus maritimus*, last seen in the 1890s, and Oysterplant *Mertensia maritima*, the last of which was destroyed by coast protection works.

The last site where Little Terns nest in Wales is at Gronant on a shingle feature. They nested on the great shingle bank between Criccieth and Craig Ddu and on the Cemlyn ridge into the 1930s and clung on north of Towyn into the 1970s. Buglife also lists a series of Biodiversity Action Plan (BAP) insects as exploiting shingle habitats.

Ecosystem services

Behind the legends of Cantref Gwelod and other drowned lands probably lie folk memories of storm surge events, when major changes happened to shingle ridges or they were breached. These events may have caused low-lying land to flood for long

Sea-kale *Crambe maritima* is robust and can often regrow from both the base and tops of root-stocks exposed when storms have moved the shingle.

Gwerth Traethau Gro

periods as stream outlets were blocked, or maybe river mouths diverted by shingle spits opened in different places. Even in modern times some shingle banks intermittently block streams, so water levels behind them vary erratically. This type of fluctuation used to occur at Ystumllyn near Criccieth until the outlet was diverted through a tunnel in the Craig Ddu rock headland.

It has to be remembered that the origins of many coastal features around Wales, and much of the gross morphology of the offshore seabed, can be traced to the glacial and post-glacial history of this part of north-west Europe. Indeed, most Welsh shingle spits, bars and bay-head beaches came from reworking glacial till and outwash deposits. In only a few places has the shingle come directly from erosion of adjacent rock strata or, in even fewer places, quarrying of them.
Paleo-oceanographic studies of relative sea levels during the last 12,000 years show the likely sequence of inundation, taking account of the melt of the major ice sheets and isostatic rebound. These imply that the genesis of the major shingle structures we see today may have been much further out to sea than the present coastline, and that they gradually migrated landward as sea level rose.

As such features are constructed by wave action, unless they are starved of further material their height generally keeps pace with sea level rise and they continue to protect areas behind them from flooding by waves. Because percolation takes up much of the swash passing the front of the crest, wash-over is limited. It is noticeable that it is more often where shingle is covered by hard impervious surfaces, such as promenades and car parks, that water from waves floods on to property. Making the fullest practicable use of the ecosystem services provided by shingle banks in their natural, unimpeded state has potential for long-term cost savings, as well as being best for safeguarding their ecological interest.

Ivor Rees *is a marine biologist, and formerly a senior lecturer in Ocean Sciences at Bangor University.*

Cynefin gerwin yw gro traeth. Ond mae'n gwarchod ein glannau ac yn cynnal bywyd gwyllt diddorol iawn. Ffurfir cefnau gro pan fydd tonnau storm yn taflu cerigos tu hwnt i gyrraedd arferol y môr a gallant godi'n uwch na'r tir y tu ôl iddynt. Wrth i'r gro sefydlogi, ac wrth i ddeunydd organaidd gronni bydd planhigion fel betys môr a llygwyn yn cytrefu. Mae glaw a gwlith yn caniatáu tyfiant planhigion eraill sy'n llai goddefgar o ddŵr hallt. Mae trychfilod arbennig yn gysylltiedig â'r cynefin a chefnen o ro yng Ngronant yw'r safle nythu olaf ar gyfer morwenoliaid bach yng Nghymru.

Mae 810 ha o gefnau gro â llystyfiant yng Nghymru. Ffurfiwyd y mwyafrif o'r cefnau yn y cyfnod rhewlifol ac ôl-rewlifol ac mae'n debyg iddynt gael eu creu ymhellach i ffwrdd o'r glannau presennol ac iddynt fudo tua'r lan wrth i lefel y môr godi. Bydd cefnau'n dal i gael eu hailweithio cyn belled ag y deil y tonnau i symud deunydd a byddant yn parhau i warchod tir, yn enwedig gan fod hidliad yn chwalu nerth y tonnau sy'n golchi o'u blaen. Mae'n bwysig eu cadw yn eu ffurf naturiol os am warchod ein glannau mewn ffordd gost-effeithiol.

Peter Eeles

Riding High -

Saving the High Brown Fritillary

Butterflies are a barometer of environmental health, and the historic decline of all our fritillary species offers a stark warning about the deteriorating state of butterfly-rich habitats. Yet one species has recovered against the odds, a tribute to the energy and interest of landowners, organisations and volunteers. RUSSEL HOBSON and RICHARD SMITH tell the story of the recovery of Wales' last population of the High Brown Fritillary.

Fritillary butterflies remain a focus of much conservation effort in Wales. For some, like the Marsh Fritillary, it is because Wales has a significant proportion of NW European populations. For others, it is because they are endangered in these islands, on the north western edge of their European range. One such is the High Brown Fritillary *Argynnis adippe*.

The High Brown Fritillary has suffered a massive decline in Wales, a loss of 81% in recorded 10km squares between 1970-82 and 1995-2004.

Back in 2003, in an article on fritillary butterflies (*Natur Cymru* 7, p22) we talked about the last two Welsh sites for High Brown Fritillary. Seven years on, efforts on the last Powys site, at Allt Dolanog, were too late to save the butterfly there. However, work focussing in the Vale of Glamorgan has been hugely successful. So, for once, let us celebrate a success and see what lessons we can learn.

Paul Kipling

High Brown Fritillary

Last site in Wales

The last remaining locality is centred on the Alun Valley in the western Vale. The butterfly occupies just five 1km squares, with the next nearest population across the Bristol Channel at Heddon Valley on Exmoor. Part of the Alun Valley landscape (mostly common land) is an SSSI, primarily for its very unusual mix of humid heath, calcareous heath, and limestone grassland, but across the whole valley there is also ancient woodland, neutral grassland and acid grassland with scrub and bracken. Land-use is also mixed, with a golf course, three active quarries and grazing by sheep.

The total landscape is about 254 hectares of unimproved habitat. In 2002, 69ha were identified as having potential for High Brown Fritillary. However, only 15ha were thought to be suitable breeding habitat and there was concern that their quality was declining. The importance of the Vale of Glamorgan locality had led local volunteers to establish two single species transects in 1995. This has been an essential tool in helping to understand the impact of management over the last ten years. Also from 1999 there were trials of small-scale coppicing and bracken management.

From small beginnings...

By 2002, all those involved with the High Brown Fritillary realised we had to do more, and quickly, to save the butterfly. A baseline habitat condition survey was undertaken and a management plan written. The baseline data, transect results and management plan process helped all the partners agree to a shared vision of what needed to be done. With the support of landowners, commoners and the local Tarmac quarry, a successful bid to the Aggregates Levy Sustainability Fund triggered three years of more concerted activity.

The work focussed on knocking back the scrub, bramble and dense bracken on the valley slopes. The Glamorgan Heritage Coast provided the machinery in the form of chainsaws and self-propelled scythes while volunteers from many different organisations provided the muscle on what has become a very sociable winter task.

Paul Dunn

Alun Valley

By 2007, an additional 48ha had been restored and up to a further 2ha are now cut each year on a rolling cycle. However, it was clear that manual cutting would not sustain the site on its own. Three further grants from the Countryside Council for Wales and PONT (Grazing Animals Project) have seen 17ha of the private land fenced and in 2010 a livestock corral was erected. This will allow rough grazing by ponies, and possibly cattle, to be re-introduced, enabling volunteer effort to focus on the unfenced areas and clearing the scrub regrowth that the livestock leave.

To raise the profile of the High Brown Fritillary locally, guided walks were organised and advertised in the villages surrounding the Alun valley. Over 90 people have attended walks and workshops to see the butterflies and work that had been done. The project put out press releases and a newsletter, but having the Heritage Coast as a partner has helped disseminate the message to schools and visitors, as part of their programme of talks and events, reaching a far bigger audience than the project on its own could achieve.

Further afield

With just one occupied landscape area remaining, but adult numbers increasing dramatically, the partners felt we needed to look at restoring former sites, where the butterfly had been present in the late 1990s. Another small grant was obtained to allow former and other possibly suitable sites within 15km of the Alun Valley to be assessed. We visited 11 sites and recommended work on eight of these. However, to put it in to context, only 8.82ha of suitable or potentially suitable habitat was found (just 3% of the unimproved habitat on the former sites) compared with the 69ha in the Alun Valley landscape (27% of the unimproved habitat), so a key recommendation was to continue and expand the Alun Valley work as already described.

Butterfly Conservation then used Species Challenge funding to start work on the eight other sites. Even though it was a relatively small pot of money, it went a long way to helping build relations on two other local commons.

Peter Eeles

High Brown Fritillary ovum

At Y Graig above Llantrisant, three years' work cutting back dense bracken and opening paths has allowed the commoners to reintroduce grazing. This prominent site was regularly subject to large scale arson but, thanks to the work, the scale of burns has been reduced and suitable habitat is being created. At Mynydd Ruthin, where grazing restoration is much more difficult, the work mainly involved clearing scattered thorn bushes and arson has remained a potential problem.

How do we know it is working?

Two critical elements have been the single species transect and regular repeats of the baseline vegetation monitoring. On the transect, adult numbers declined up to the trial coppicing in 1999. Since the scale of this work was extended from 2003, numbers have dramatically increased. We are starting to see the annual numbers fluctuating, possibly due to the weather, but even the low points have still been above the best pre-1999 high in 1995. We hope the population level is now high enough to ensure persistence at least in the medium term.

The vegetation monitoring consists of a standard method of assessing the condition of bracken slopes for Fritillary butterflies. Line transects down the slopes are sampled at regular intervals and the abundance of positive and negative indicators recorded. When repeated in 2006 the abundance of

Peter Eeles

The larvae can be very well camaflouged

violets, the larval foodplant, had increased by 112% and the sward height more than halved compared to the 2002 baseline figures. These are both positive signs that the management is working. Indicators of poor site quality – cover of grass/moss, bramble and bluebell – all declined in abundance.

This work was repeated in 2010. Violet abundance has fallen back but is still well above 2002 figures; sward height has remained static; and grass/moss and bramble have declined further. Most intriguingly, violet abundance has remained highest on the ungrazed land, perhaps because this is where more restoration work has occurred, but equally sheep (which graze the common) may be selectively eating the violets.

We hope an MSc student can unravel this mystery in 2011 and undertake more detailed statistical analysis of the data.

Searching for larvae

Ad hoc larval searches have also been done. The larvae are very well camouflaged and it takes a great deal of patience to spot them. The figures suggest that the larvae tend to feed on the open bracken slopes rather than the hazel scrub edge. As 80% of larvae found since 2006 were found on the recently managed sub-sites, it suggests the females are preferentially selecting managed bracken stands for egg laying. However, we have not yet corrected this for survey effort.

Benefits to other species

All those involved with the project have also been identifying other species that have benefited from the management. Creating the early successional stages required by High Brown Fritillary has also benefited:

Liz Fleming-Williams

- **Early Purple Orchid & Twayblade (above),** appearing in huge numbers on a cleared south-facing slope in spring of 2006.
- **Hornet Robberfly** recorded in good numbers in 2006, the first record in Vale of Glamorgan for a century.
- **Dotted Beeflies**, recorded in good numbers in April/May 2010 on recently cleared patches with bare ground & early spring flowers.
- **Clouded Buff** moth, scarce in Vale of Glamorgan, in 2005.
- **Silver-washed Fritillary**, which had disappeared in early 2000s, but reappeared in 2007 and has now firmly re-established itself.
- **Small Pearl-bordered Fritillary**, whose numbers have increased steadily over the management period.
- **Nightjar**, observed in a newly coppiced area twice during one week in late May 2006.

The future

The future conservation focus for this butterfly has to be on its existing locality where most of the habitat is. However, we will continue to look for opportunities to work with commoners on other sites, as even small amounts of funding can help to mobilise the efforts of commoners in restoring grazing on sites. The High Brown Fritillary is a target species for the targeted element of Glastir but it is difficult to see at the moment how this will help, as the scheme's focus is on soil carbon and water quality.

There is potentially more habitat to be created in the Alun Valley by getting the secondary hazel scrub in to a coppice cycle. But perhaps most important is introducing grazing by cattle or ponies on to both the private and common land to create the niches needed by violets and the High Brown Fritillary.

Russel Hobson *is Head of Conservation and* ***Richard Smith*** *is High Brown Fritillary Project Officer, Butterfly Conservation Wales.*

Sadly, one of our ardent supporters, ***Mr Richard Picton-Turbervill*** *died in July 2010. Without access to his land and the freedom he gave us to do what was necessary for the High Brown Fritillary, it is unlikely so much could have been achieved.*

Acknowledgements

The work to save the High Brown Fritillary was initiated and is maintained by the commitment of volunteers, Butterfly Conservation's South Wales branch and the Glamorgan Heritage Coast. Much of the larval searching was done by Mike Clark and Paul Dunn. Support from the Vale of Glamorgan LBAP, CCW and the landowners and commoners has also been essential.

Peter Eeles

High Brown Fritillary pupa

Y fritheg frown yn dal ei thir

Nôl yn 2003 dim ond dau safle oedd ar ôl i'r fritheg frown yng Nghymru. Methwyd â'i hachub ar Allt Dolanog ym Mhowys ond hanes gwahanol sydd ym Mro Morgannwg. Yma, yn nhirwedd brith Dyffryn Alun, cliriwyd llwyni, mieri a rhedyn ungoes ar y llethrau i wella cyflwr 48ha o gynefin - yn ychwanegol at y 69ha a oedd eisoes yn addas ar gyfer y fritheg frown. Bellach mae merlod yn helpu mudiadau a gwirfoddolwyr i reoli'r cynefin ac mae trigolion a disgyblion lleol, yn ogystal ag ymwelwyr, wedi cael dysgu mwy am y glöyn byw hwn.

Yn ddiweddar aed ati i wella cyflwr 8 safle arall cyfagos (8.82ha) lle bu'r glöyn yn bresennol yn y 1990au. Cafwyd peth llwyddiant o ganlyniad i glirio ac ail-gyflwyno pori – er bod tanau bwriadol yn dal i fod yn sialens mewn mannau.

Gwella mae ansawdd y cynefin, o ran uchder llystyfiant a niferoedd fioledau, ac mae'r fritheg frown ar gynnydd. Gwella hefyd mae cyflwr rhywogaethau eraill, fel y tegeirian porffor cynnar, y caineirian bach, y pryf lladd cacynaidd a'r frith arianresog o ganlyniad i'r gwaith. Yn y dyfodol rhaid canolbwyntio ar yr ardaloedd presennol sydd â chynefin addas, gan gadw llygad ar agor am safleoedd posib eraill ar yr un pryd. Cyflwyno merlod a gwartheg fydd y nod pennaf ar y tiroedd hyn.

Inspired by Nature Competition Entry

Funnelly enough - a personal Fungal Foray

"Stop the car."

I did as I was told and jammed the brakes on. The bag of shopping on the back seat was not strapped in and it toppled over, spilling the organic sprouts. The sound of them hitting the car floor demanded a comment.

"Whoops."

Billie wasn't listening. She was already out of the car, looking for the poorly hare she thought she'd seen hobbling into the hedge lining this single track country road in the Tywi Valley. I followed her out but paid little attention to the hare. Serendipity had caused me to stop next to a patch of large wild mushrooms I'd vaguely noticed as my car whizzed past earlier. Now I could see they formed a ring. Getting up close, it was obvious they weren't like the ones from the shops. A different colour to start with. Much more creamy. The shape was odd too, kind of funnel shaped, with large gills running down the stem, rather than tucked up like shop mushrooms.

Billie had wandered down the quiet country lane and shouted across to me.

"Can't see anything,"

"Right," I answered quietly and absent-mindedly.

I'd not long moved down to rural Carmarthenshire

Mandy Marsh

Trooping funnel cap *Clitocybe geotropa*

from the urban heart of Manchester, and was gradually re-awakening from a naturalist slump. Too many years of slim pickings, fed only by wasteland weeds and some last vestiges of green lung, had dulled my botanical senses. It was autumn and already too late to fully rediscover my love for countryside flowers. Instead, this was the time for a life-form I'd barely noticed before, apart from a youngster's desire for natural intoxication.

I knelt down and touched one of the large mushrooms. It was hard, a bit rubbery and subtly textured. Onto my knees, I leant forward and smelt, an instinctive practice I'd always enjoyed doing with flowers. A faint sweetness but nothing nasty.

"Do you know what it is?" Billie had walked back and voiced what was on my mind.

"No, I, erm..." I reached out and picked one before Billie had the chance to tell me not to.

"Hey, that's naughty that is." Billie's voice was half disapproving, half joking.

I rolled round and looked up, holding my trophy out to her, beaming like a child who'd discovered a jar of sweets. I'd discovered a new hobby.

My small natural history library, cheaply made up of second-hand and remainder bookshops bargains, helped me out. It took an hour or so of flicking through page after page of fungi pictures to determine I'd discovered a Trooping Funnel-cap. Well, as near to Trooping as I could be sure given that I'd never heard of funnel-caps before. Nor of milk-caps which looked really similar but, as the book said, 'exudes a milky sap when damaged'. Mine didn't. Curiously, I started seeing these funnel and milk-caps on every little walk I went on over the next couple of weeks; on the lonely roadsides of Capel Isaac, perched on Abergorlech's steep hillsides, in the open wooded glades of Cwrt Henri and along the chilly coastal path at Llansteffan.

But it wasn't just fungi with funnel shaped caps and milky sap, I was now discovering puffballs that made me sneeze, stinkhorns that smelt disgusting, inkcaps which turned to a mushy inky mess on my kitchen table and Jelly Ears that look and feel like a human ear. At my new workplace, the National Botanic Garden of Wales, their farmer enthusiastically showed me a meadow full of beautiful glossy toadstools coloured in vivid reds, yellows, pinks and greens. These were waxcaps, a group of fungi I'd also never even heard of before.

All this got me thinking. How come, as someone who loves walking around the British countryside, I'd never noticed all these wild mushrooms before?

Just as my interest flared up, so the fungi season died down. By January, I was left to concentrate on occasional bracket fungi that sucked the life out of trees. These can look so huge and distinctive, but they are deceptive. Just when I thought I'd matched one to a book illustration, I turned the page to find another set of similar looking ones.

I needed help, but I had to wait until the following autumn. Returning from a blustery walk on the beach in late summer, I noticed a small poster pinned up on the notice board at the café in Pembrey Country Park. This was advertising a fungal foray there in October.

John Harold

Waxcap *Hygrocybe splendidissima*

I'd never been on one before and didn't know what to expect. I felt a bit shy and unqualified, so I bribed Billie to come along to keep me company. I needn't have worried. Arriving five minutes early, I found a crowd of over twenty eagerly stood around Dr Philip Jones, the foray leader. Together, we ambled around sand dunes and pine woods for the next two hours. My fears of looking stupid soon melted, as I realised most of us were curious beginners, just wanting to know how to go about naming things and what was edible, hungry for any weird and wonderful anecdotes about fungi folklore. Strangers chatted to strangers. We didn't get far as there was so much to see, much of it discovered by enthusiastic children with a licence to run off in all directions. My little note book filled up with brightly coloured russulas, bizarre earthstars and some great names – Elfin's Saddle, Slippery Jack, Dead Man's Fingers and Plums and Custard. My last notebook entry was Philip's phone number, the biggest discovery of the day.

Fast forward a few years and I've started to run forays myself, on the Botanic Garden's waxcap meadows. I'm still bedazzled by most fungi I find, but I've learnt enough to know that there are all kinds of people who would like to know more about fungi but don't know where to start. I also now know that raising awareness of the wonderful world of fungi will help to conserve them. Maybe this story will help.

Bruce Langridge

Michael D Smith

Worlds apart - *the life of an amphibian*

Common frog *Rana temporaria*

Existing betwixt and between land and water, amphibians are a remarkable legacy of evolutionary history. Most of us will encounter from time to time at least some of the half dozen species we have in Wales; knowing more about their intimate life-cycles can only add to their fascination. ***ZIGGY OTTO*** ***takes us on a tour of Welsh amphibians and discusses the challenges facing their conservation.***

As a young teenager I always wondered what had gone wrong with the evolution of amphibians. I considered them animals that hadn't or couldn't make up their minds whether they wanted to live in the water or on the land. I guessed they wanted the best of both worlds – and what a life they chose! Imagine waking up from hibernation that protected you from the most inclement weather, you waddle or hop to the nearest pond, you make love non-stop for days if not weeks in water warmed by spring sunshine, then you eat out and nap all summer and autumn before returning to your cosy nook to forget about the outside world. When sunshine starts tickling you again in spring, you start your cycle of months of fun and frolics all over again. Wow!

What the above idyllically painted picture does not account for is that you are by nature an absentee parent and most of your offspring will die before they can even waddle or hop. Maybe we should start by asking the question: how did amphibians become timeshare holders of both water and earth in the first place?

Amphibian evolution

The first major groups of amphibians developed in the Devonian Period (starting 416 million years ago) from fish similar to the modern coelacanth (fish with 'hollow spine' fins) and lungfish which had evolved multi-jointed leg-like fins that enabled them to crawl along the sea bottom. These amphibians were as much as one to five metres in length. However, amphibians never developed the ability to live their entire lives on land, having to return to water to lay their shell-less, unprotected eggs.

In the Carboniferous Period (starting 359 million years ago), the amphibians moved up in the food chain and began to occupy the ecological position currently occupied by crocodiles. These amphibians were notable for eating the mega-insects on land and many types of fishes in the water. During the Triassic Period (starting about 250 million years ago), the better land-adapted proto-crocodiles began to compete with amphibians, leading to their reduction in size and importance in the biosphere.

There are nowadays six amphibian species native to Wales. Frogs and toads are familiar creatures in both the countryside and towns of Wales: we are less likely to see the three species of newt. All amphibians require freshwater in which to deposit their eggs or spawn and enough suitable habitat in which to spend the rest of their year.

Frogs and toads

The Common Frog *Rana temporaria* is probably the best known amphibian in Wales as it is widespread throughout the lowlands and can also be found quite high in the uplands. It grows to 10cm and varies from yellow to green or brown in colour, often with dark streaky markings on the body and legs. Its long hind legs make it a powerful swimmer and leaper. Contrary to popular belief, the common frog spends much of its life on land, but between January and March they gather in shallow ponds to spawn. You can hear the males emitting low, buzzing croaks as they pair up with females. The pairs remain in the spawning 'tandem' posture for days before the spawn is laid suddenly. All 1,000 to 3,000 eggs are shed in one batch, usually early in the morning, and the male simultaneously fertilises them. The males fight to win females and many frogs die at this time from exhaustion and subsequent capture by predators.

Michael D Smith

Common toad *Bufo bufo*

The newly hatched black tadpoles swarm round the spawn clumps, but as they grow they become mottled brown and more secretive and hide from preying fish, newts and insects among the weeds. New tadpoles have external gills, which are absorbed after about four weeks; hind legs appear at seven weeks and the tail is absorbed by 12 weeks when the front legs emerge and the lungs are used.

The Common Toad *Bufo bufo* is also widespread in Wales, but does not reach such high altitudes as the frog. Unlike frogs, toads have a dry, warty skin with a rounded (not pointed) nose and large swollen glands behind the eyes. Their colour varies from pale brown through reddish brown to chocolate. Females grow up to 13cm long, much larger than the males. For a short time each year common toads congregate, often in colonies of thousands, to lay their eggs. They are 'explosive' breeders, with many hundreds of sexually mature individuals from a district migrating to their chosen breeding ground, finding mates and spawning within a week or so. Spawn is laid in strings (not clumps) and draped over water plants during March and April. Of the 1,000 to 4,000 eggs laid by a female, only 5 per cent are likely to survive. Even so, on damp nights in June or July, pond banks

Michael Hammett, CCW

Natterjack toad *Epidalea calamita*

swarm with tiny toads dispersing into the countryside. They will not return, except for a soak in a dry spell, until they are ready to breed two or three years later.

The Natterjack Toad *Epidalea calamita* became extinct in Wales during the last 40 years, because of the destruction of its habitats, and is currently restricted to a few new colonies on the dunes of the north-east Wales coast. Generally smaller than the common toad, reaching about 6 or 7cm, it is distinguished by its paler colouration, with greenish patches and a distinctive yellow stripe down the spine. Spawn is laid in strings in shallow dune ponds in April; toadlets quickly develop and move into the surrounding dune habitat, where they spend most of the day in their burrows. Breeding males keep up a noisy, protracted croaking during mild May nights.

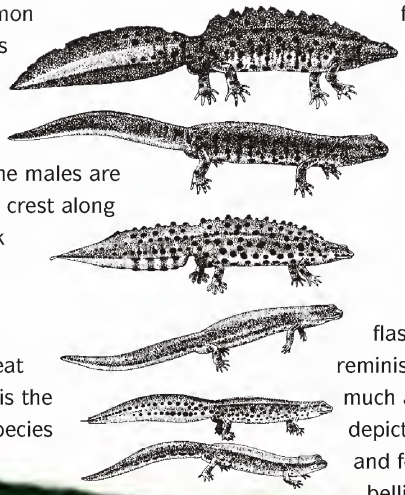
The few frog and toad tadpoles surviving their many predators, including fish, great diving beetles, water boatmen, dragonflies and newts, will leave the pond after about 12 weeks as froglets and toadlets respectively between June and August.

A trio of newts

The Palmate Newt *Triturus helveticus* is the most common but smallest newt species in Wales. It is about 6 - 9cm long and of a golden brown colour. During the breeding season, males develop a small crest along the back and a broad tail with a fine filament (a slender threadlike fibre) at the tip. Most distinctive are the black webs that grow on the hind feet during this time. The belly is orange/yellow with a pattern of black spots. Females are much plainer and have no spots on the throat area.

Michael Hammett, CCW

Although named Smooth or Common Newt *Triturus vulgaris*, this species is less common in Wales especially in the west. The female is fairly similar in size and colour to the palmate newt, but the males are larger and develop a high rippling crest along the back and tail, covered in black spots. They do not develop a tail filament or webbed feet.



At up to 15cm long, the black Great Crested Newt *Triturus cristatutus* is the largest of the three native newt species and is found throughout most of Wales, except in Ceredigion and Pembrokeshire. The greatest concentrations correlate with the high pond density areas of north-east Wales, and the eastern border counties. In the breeding season, male great crested newts develop a high serrated crest along the back and a silvery blue flash on the tail. They become reminiscent of miniature dragons, but very much alive ones – unlike the species depicted on the Welsh flag. Both males and females have stunning orange bellies with a pattern of black spots. The great crested newt spends more time in water than its smaller cousins.

The spring behaviour of all three newt species is very similar. Males court females by swimming before

Male Great crested newt
Triturus crisatatutus

Michael D Smith

Smooth newt (male) *Triturus vulgaris*

them vibrating their tails rapidly. If the female is receptive, the male deposits a small bag of sperm on the bottom of the pond. The female moves over it and takes it up into its cloaca. Fertilisation occurs internally. The female then climbs among water plants laying up to 300 eggs, singly, and wrapping each in a leaf to protect it from predators. In behaviour and development, tadpoles of great crested and palmate newts are like those of common newts. Newt larvae (or 'efts') are more physically advanced than frog or toad tadpoles when they hatch. At this stage, they are able to hunt small insects and even other newts. Adult newts feed greedily in the ponds as well, snapping up tadpoles and small aquatic insects. They surface frequently to breathe. In early summer they leave the pond, but a few may return to hibernate there. The young newts leave the water in August or September, but some overwinter still in tadpole form.

Amphibian conservation

Amphibians have had and continue to have a tough time in Wales, because their life-cycles determine their very specific habitat requirements, foremost the need to stay near a source of open water for egg laying. Ponds, however, have become fewer and more scattered because many have been polluted or drained during the agricultural changes of the last 50 years, and many more have been allowed to grow over and dry up. Their important terrestrial habitats have also been damaged in many areas by building development on the edge of settlements of land formerly suitable for them, by hedge removal, the intensification of agriculture and the use of chemicals; all of which had harmful effects on amphibian populations. Their sources of food and shelter have also declined considerably in some areas, because of habitat loss, degradation and fragmentation, and many 'islands' of still suitable habitat are nowadays separated by less suitable habitats.

All native amphibians are nowadays afforded protection under the Wildlife and Countryside Act 1981 (as amended). However, current legislation continues to be a source of great bewilderment and even irritation for me, because – for instance – I am not allowed to sell or advertise for sale the adults of common frog, common toad, smooth and palmate newt, their eggs and larvae, but I could not be prosecuted for wiping out an entire population in my neighbourhood.

The great crested newt and natterjack toad have much greater protection under European as well as UK legislation. As well as being illegal to sell and advertise for sale, it is also illegal to intentionally kill, injure, possess or disturb the animals or to damage places used by them for shelter or protection. All stages of their life-cycles are protected in this way. Legal battles involving great crested newts are frequently fought as a result of planning applications for developments that lack appropriate mitigation measures for this species and its supporting habitats. The most puzzling facet of this issue is the discrepancy in the degree of legal protection (and no doubt fervour to fight the fight) between highly protected amphibians and those less so, although all of them are either in decline or already in peril. I can't help but sense and think that there is still a leaning towards protecting iconic, glamorous, cute and cuddly, native-exotic or sexy species more than those that are not.

Great crested newt, natterjack toad and common toad are also on the NERC Act 2006 Section 42 (i.e. 'Biodiversity Duty') List of Species of Principal Importance for Conservation of Biological Diversity in Wales (i.e. Biodiversity Action Plan Priority

Species). The NERC Act, however, is not for species protection per se, but intended to 'encourage' public bodies to promote the conservation of biodiversity. No 'stick' comes with it should they fail to do so and, in the case of the common toad, without any repercussions for me as an individual of an otherwise public body, should I be minded to kill specimens of this species for whatever reason.

It is quite obvious that some areas of biodiversity and nature conservation legislation could not be more bizarre even if legislators were to try. The question arises why we continue to fail to halt the loss of biodiversity in Wales, but I am confident that some of the answers – or parts thereof – are somewhere in this article. At first glance they would seem to include concerted efforts in respect of pond restoration and creation schemes; the end to hedgerow removal and reinstatement wherever possible; and the establishment of wildlife corridors where desirable, to ensure there are enough suitable and accessible habitats without barriers to amphibian dispersal. For the natterjack toad we must make sure that the sand dune systems are mobile enough to create and keep open their preferred shallow ponds. Last, but by no means least, the continuous loss of biodiversity caused by inappropriate developments and some agricultural practices will need to be addressed as a matter of priority, although the latter will no doubt prove the most difficult to tackle.

Dr Ziggy Otto *is a Senior Marine Conservation Officer with the Countryside Council for Wales (West Region), but his freshwater divinOg interests also lure him at times to take a closer look at habitats and species not found in the salty milieu.*

Ar dir, mewn dŵr ....

'Dyw amffibiaid erioed wedi esblygu'r gallu i dreulio'u bywydau'n llwyr ar y tir. Rhaid iddynt ddychwelyd at ddŵr i ddodwy eu hwyau di-blisgyn. Chwe rhywogaeth frodorol o amffibiaid sydd yng Nghymru.

Y broga neu'r llyffant melyn yw'r mwyaf cyfarwydd. Mae'n gyffredin ar dir isel ond gall fyw ar diroedd uwch hefyd. Mae'n neidiwr ac yn nofiwr campus. Rhwng Ionawr a Mawrth bydd y benywod yn dodwy miloedd o wyau mewn pyllau bas. Gwelir y llyffant neu'r llyffant dafadennog ar draws Cymru hefyd ond nid ar dir uchel. Bydd miloedd o oedolion yn mudo gyda'i gilydd i baru a bwrw rhubanau grifft mewn llecynnau bridio penodol. Diflannodd llyffant y twyni o Gymru dros y 40 mlynedd ddiwethaf oherwydd dirywiad cynefin. Sefydlwyd ambell boblogaeth newydd ar dwyni gogledd-ddwyrain Cymru. Dodwir wyau ym mhyllau'r twyni ym mis Ebrill. Bydd llyffantod a brogaod bychain yn gadael pyllau dŵr rhwng Mehefin ac Awst ar ôl rhyw 12 wythnos o ddatblygu.

O blith ein madfallod dŵr, yr un balfog yw'r lleiaf a'r mwyaf cyffredin. Mae gan y gwrywod ffilament hir ar ben eu cynffonnau a thraed gweog yn ystod y tymor bridio - sy'n wahanol i'r fadfall ddŵr gyffredin (sy'n llai cyffredin yng Nghymru!). Mae'r fadfall ddŵr cribog yn absennol o Geredigion a Sir Benfro ac yn fwyaf niferus yng ngogledd ddwyrain Cymru lle ceir digonedd o byllau dŵr addas. Mae'n treulio mwy o amser yn y dŵr na'r rhywogaethau eraill ac mae boliau oren y ddau ryw a chrib danheddog y gwryw yn y tymor magu yn nodweddiadol iawn.

Dodwir rhyw 300 o wyau gan fadfallod dŵr – pob un wedi'i lapio'n unigol mewn deilen i'w warchod rhag ysglyfaethwyr. Pan fydd madfallod dŵr bychain yn deor gallant hela trychfilod a madfallod dŵr eraill yn syth. Bydd y mwyafrif yn gadael y pwll yn ystod Awst neu Fedi ond bydd rhai yn treulio'r gaeaf fel penbyliaid.

Mae amffibiaid wedi dioddef yng Nghymru dros y 50 mlynedd ddiwethaf oherwydd diflaniad pyllau dŵr a dirywiad cynefinoedd eraill sy'n cynnig bwyd a lloches iddynt. Mae cynefinoedd addas yn llawer mwy ynysedig bellach. Mae'r ddeddfwriaeth sydd i fod i'w gwarchod yn ddyrys, yn annigonol ac yn anghyson – ac yn cynnig lefel amrywiol o warchodaeth i wahanol rywogaethau er eu bod i gyd yn prinhau. Dylid taclo'r gwendidau deddfwriaethol hyn ond rhaid hefyd mynd i'r afael â gweithgaredd ymarferol i adfer a chreu cynefinoedd er mwyn sicrhau eu bod yn addas a hygyrch, ac atal gweithgaredd amhriodol ac anghydnaws.

Lake Vyrnwy

environment on the market

The sale of the Lake Vyrnwy Estate has attracted interest from around Wales and beyond. RSPB Cymru is one of the main partners working at the Estate. ***DELYTH WILLIS*** *recounts the charity's long involvement at the reserve and the challenges presented by a change of ownership.*

Lake Vyrnwy is truly one of the most well known beauty spots in Wales. Indeed, so much so that the view of the tower and lake was recently voted 'Wales's most iconic image' in a Western Mail survey. Every year thousands of people flock to the area to enjoy its tranquillity and beauty, escaping from the hustle and bustle of everyday life.

The importance of the site, however, goes beyond its role as a tourist attraction; it supplies clean water to millions of people and is home to internationally important wildlife and habitats, some of which help store and capture carbon, helping fight against climate change.

The areas surrounding the lake are highly protected, forming part of the Berwyn Site of Special Scientific Interest (SSSI), Berwyn Special Protection Area and Candidate Special Area of Conservation. The site was also declared as a National Nature Reserve (NNR) in October 1998.

Since 1977, RSPB Cymru has been actively involved at the site but until 1996 our primary role was to evaluate the area for its conservation interest and provide information and advice to partner organisations on upland management. In April 1996 our involvement increased when we entered into a farming partnership with Severn Trent Water and took over the day-to-day running of the Severn Trent Water in-hand farm, Tŷ Llwyd, which had been running at a loss for many years.

From then on the charity's investment in the reserve has grown into what you see today – a viable farm business, nature reserve, environmental education resource, tourist attraction and top quality producer of organic mountain lamb and Welsh Black beef.

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A patchwork of habitats

Restoring peatland

For the past four years, RSPB Cymru has also been leading on a major European-funded project, the LIFE Active Blanket Bog in Wales Project. This is a partnership between the RSPB, Countryside Council for Wales, Environment Agency Wales, Forestry Commission Wales and the European Commission. The main objective was to improve the state of the important blanket bog across two Special Areas of Conservation (SAC), the Berwyn & South Clwyd Mountains SAC and the Migneint-Arenig-Dduallt SAC.

Four years in, results show that the project has been a great success: a large area of blanket bog has directly benefited from the work, which has included extensive grip blocking to reverse past drainage and the eradication of non-native and invasive plant species. The project has also increased awareness of the importance of this habitat within the local community, in particular its schools and landowners.

Alas, like all projects of its type, the LIFE Active Blanket Bog in Wales project has a limited lifespan. However, the RSPB Cymru team has been working on an After LIFE strategy to ensure the good work is carried on. The key aim of our new North Wales Moors Futurescapes project is to build on the LIFE Project's excellent start, for the benefit of the environment, local economy and community. Futurescapes is the RSPB's contribution to landscape-scale conservation, a growing movement among UK conservation groups to provide more rich habitats for wildlife and diverse, green spaces for people to enjoy, not only in protected areas but far beyond.

All in all, RSPB Cymru has been actively involved at Lake Vyrnwy for over 30 years, helping to protect the threatened habitats and species while also adding to the local economy by offering local employment, attracting tourism and using local contractors.

Up for sale

News of Severn Trent Water's aim to sell the Estate in July posed a number of challenges and opportunities. The sale of the estate itself was separated into four lots: the in-hand farming operation covering 4,778ha, which RSPB Cymru manages; let farmland covering 2,125ha; woodland

covering 2,024ha; and a residential and commercial portfolio of 31 properties. A 30-year lease for surface rights over the Lake itself (497ha) is also available by separate negotiation. In all this equates to around 9,423ha, which are up for a 125-year lease sale as a whole or as four lots, at an asking price of £11 million. This makes it among the largest areas of land to have been put on the open market in England and Wales in living memory.

In RSPB's view the main purpose of the Vyrnwy Estate is to provide public benefits, including clean drinking water, a high quality wildlife experience, a beautiful landscape in which to work, live and visit, and a break on the loss of carbon to the atmosphere, helping in the fight against climate change. Because of this, we were not convinced that the outright sale of the Estate best serves the interests of the people of Wales or the site's legally protected wildlife and habitats. We believe the land should remain under the management of organisations whose primary purpose is to provide these benefits to the public.

We were initially very concerned that a sell-off would threaten all this. Reassurance came when Severn Trent Water confirmed that it would not sell to the highest bidder but was looking for organisations of the right standing, which included community engagement and environmental stewardship.

With this in mind, we began working with other public interest organisations with varying expertise to explore purchasing and running the Estate as part of a consortium of Public Interest organisations.

Novel solutions

One of the more unusual partnerships formed was that of the RSPB with Mid-Wales Housing Association. This may have seemed odd at first, but on closer inspection the expertise provided by both organisations in relation to Lake Vyrnwy was a natural fit. RSPB Cymru had the skills needed to manage the estate's varied habitats and in-hand farm, Tŷ Llwyd, while Mid-Wales Housing Association had similar strengths in property management and commitment to affordable housing.

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There are few examples of public interest consortiums of this kind in existence today and this in itself has posed a challenge, as time is needed to develop the concept, the funding and ways of working. However, it would not be the first time that the RSPB had stepped forward to find imaginative solutions to difficult challenges. The work being done with United Utilities in north-west England, for example, has pioneered the delivery of multiple public benefits through integrated land management. This Sustainable Catchment Management Programme (SCaMP) is a rare example of landscape-scale delivery of multiple ecosystem services, and Vyrnwy Estate arguably opens up the best opportunity to do the same in Wales.

The Welsh Assembly Government is currently consulting on 'A Living Wales', a framework for managing the Welsh environment, countryside and seas in an integrated way. This champions the need for an ecosystems and landscape approach to land management, similar to that of the RSPB's Futurescapes programme. Thus the Assembly's policy framework and RSPB's approach dovetail perfectly.

Before any sale can go through, Severn Trent Water is obliged to consult formally with the Countryside Council for Wales (CCW) under the terms of Section 156 of the Water Industry Act 1991. This consultation will lead to a recommendation to the Secretary of State for the Environment. Oddly, the fact that Severn Trent Water is mainly based in

England gives the Secretary of State the final say on any sale and any conditions on the terms of sale. As far as is known this is the only circumstance under which the future of Wales' environmental assets would be determined by the UK central Government, other responsibilities for Welsh environmental policy being devolved.

As for the final sale itself, this in fact could take months as there is likely to be a long negotiation period while the buyer and Severn Trent Water work out conditions needed; and of course the CCW consultation is yet to begin.

Looking to the future, RSPB Cymru's ideal vision and result of sale would be for the land to be managed in perpetuity for public benefit, as an asset for the people and wildlife of Wales and the United Kingdom. The worst-case scenario, on the other hand, is if the land is sold to someone whose commercial interests compromise these aims, or who is unable to guarantee continued ownership into the future.

To reach our goal, we are currently in discussion with the partners involved to plan what a consortium would look like, how it would work and who would have responsibility for which areas. In terms of money raised, each of the partners would be putting some of their own money in as will the RSPB. Funding bodies have also been approached to see if they would be able to fill the remaining gap; the size of the gap however would depend on negotiations with Severn Trent Water. At the time of writing, the future is certainly unclear; all that can be done now is to plan and wait for a final decision, whatever that may be.

***Delyth Willis** has been Head of Public Affairs for RSPB Cymru since April 2009. Before this, she worked as Regional Public Relations Officer for the Countryside Council for Wales covering CCW's three regions within Wales.*

Dyfodol newydd i Ystâd Efyrnwy?

Mae Llyn Efyrnwy a'r tiroedd o'i gwmpas yn gyrchfan i dwristiaid, yn ffynhonnell o ddŵr i filiynau o bobl, yn cynnal cynefinoedd a bywyd gwyllt pwysig ac yn gronfa allweddol o garbon. Mae perthynas yr RSPB â'r ardal yn estyn nôl dros 30 mlynedd. Bu'n rheoli gwarchodfa yma, yn rhedeg fferm mewn partneriaeth â Dŵr Hafren-Trent ac yn arwain ar brosiect Ewropeaidd i adfer gorgors ar fynyddoedd y Berwyn a Migneint-Arenig-Ddu allt. Drwy hyn mae wedi helpu gwarchod y bywyd gwyllt a chyfrannu at yr economi leol drwy gynnig cyflogaeth leol a helpu i denu ymwelwyr.

Gydag ystâd Hafren-Trent (sef 9,423 ha) bellach ar werth, gobaith y Gymdeithas yw cynnal y buddion hyn. Ei nod yw sefydlu consortiwm gyda mudiadau budd-cyhoeddus eraill, yn cynnwys partneriaid newydd - fel Cymdeithas Tai Canolbarth Cymru sydd eisoes wedi dangos diddordeb.

Cred yr RSPB fod gwerthiant ystâd Efyrnwy yn cynnig cyfle gwych i reoli tirwedd gyfan ar gyfer ystod o wasanaethau y gall yr amgylchedd naturiol eu cynnig i'n cymdeithas. Mae cryn waith i'w wneud i sefydlu'r consortiwm, negodi'r telerau a'r amodau, codi £11 miliwn ac ymgynghori â Chyngor Cefn Gwlad Cymru. Ac yn yr achos hwn, llywodraeth ganolog y DU fydd â'r gair olaf yn y penderfyniad.

Liz Fleming-Williams

Pseudo intricata

Return of the **Welsh Specklebellies**

Liz Fleming-Williams

Nant Gwynant, Snowdonia

Three rare rainforest lichens have been recorded in Snowdonia in the past, but with continued exposure to acid rain, were they still there? Thanks to his need to 'get away from it all' despite (or because of) his pin-striped suit, RAY WOODS went off the beaten track and happened upon the Norwegian Specklebelly. Here he recounts his dogged search for the others.

From its title this article could be about a rare breed of pig or sheep repatriated to its homeland, but it is about something far more exciting. The specklebellies are a group of large lichens with a noticeably speckled underside. Three species have been found in Britain. Two species (the Intricate Specklebelly *Pseudocyphellaria intricata* and Norwegian Specklebelly *P. norvegica*) are very much at the northern edge of their world range, being much more at home in tropical rainforests, whilst the third (the Lacerate Specklebelly *P. lacerata*) clings precariously to just a handful of sites in western Britain and in Madeira and the Azores. It must be one of the world's rarest species. These are proper rain forest species.

All three lichens have been recorded from Snowdonia in the past but no details of localities could be traced. The food-producing, photosynthetic partners of these lichenised fungi are cyanobacteria (blue-green algae). They were particularly susceptible to sulphur dioxide pollution and do not grow well in

acidic sites. With Snowdonia deluged in rain, and the rain still significantly acidified by pollutants, the likelihood of survival seemed slim.

With all the most recent records from the Nant Gwynant Valley above Beddgelert, a search seemed feasible – at least until you see the valley. Almost all of the several square miles consist of woodland or rock outcrop. Needles and haystacks kept springing to mind, and just how long can a fruitless search go on for? The British Lichen Society had visited the valley twice without finding any.

Serendipity or just plain luck resulted in the discovery of the Norwegian Specklebelly. After a day in senior management deliberations in Bangor and on my way home and dressed in a pin-striped suit, I just had to get into the real world and pulled into a little lay-by high up the valley at the top woodland edge. The trees were disappointing and very acidic, but the volcanic rocks were basic and a treasure trove of cyanobacteria-containing lichens. There amongst them was the Norwegian Specklebelly. Almost certainly now lost from England, its nearest locations are over the Irish Sea in Killarney to the west or on the Mull of Kintyre to the north.

Later on a foray further south in the valley, aided by Peter Benoit and Andrew and Janet Graham, on block scree we located what had every appearance of being the Lacerate Specklebelly. Protected by its inclusion on Schedule 8 of the Wildlife and Countryside Act, it could only be photographed and the image sent for confirmation by an expert. The result was inconclusive. To my shame I never really appreciated the significance of this discovery. It was only when I started work on writing a Red Data Book of Welsh Lichens a decade later, and all the Specklebellies had been placed on the Welsh Section 42 list as being species of principal conservation concern in Wales, that I realised its importance. The Welsh population was not just an odd outpost of a large Scottish population. The Scottish population was tiny and its world distribution severely limited to a small part of the Western Atlantic. It was important to confirm its identity.

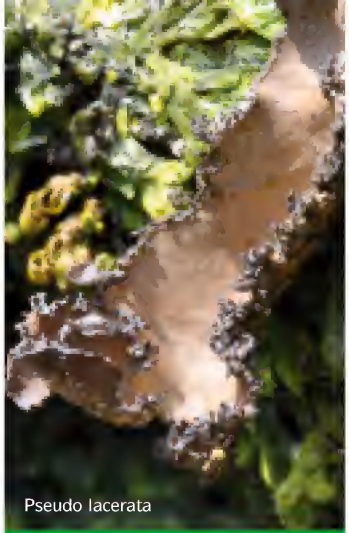
Enlisting the photographic skills of Liz Fleming-Williams a decade later, the block screes were re-examined. Now much diminished in area, a tiny patch was located and photographed and its identity confirmed. Two out of three specklebellies had been refound. But what of the Intricate Specklebelly? After

Lichen Apprentice Scheme Wales (LASW)
LASW is now one year old and the group has learnt some useful things, and not just about lichens (*Natur Cymru* 34, p47). It has been proposed to set up similar apprenticeships to study bees, bryophytes and other groups where there is a shortage of experts: those involved might benefit from the LASW experience when setting up their own schemes.

The big question hanging over the scheme is – where do we go next? It became clear throughout the year, especially on a 5-day course at Orielton Field Centre in April, that different people wanted different things. Some are complete beginners aiming to become familiar enough with key lichen families to be able to participate in focussed lichen research or surveys. Others are already quite knowledgeable about lichens and want to advance their studies to become lichen experts. Some specifically want to study lichens for their relevance to their existing jobs: for example, managing woodland/heathland habitats for lichens, or monitoring the effects of chicken farms on lichen communities.

Inevitably, there have been some frustrations, with people having to adapt to a pace suitable for all the group. And, as ever, enthusiasm and commitment are hampered by restrictions on time and funding. But it is heartening that everyone is still committed to learning, despite these limitations. We are therefore determined to make this scheme work for us by developing a programme that will accommodate the needs of all concerned in the future.

Mandy Marsh



Liz Fleming-Williams

Pseudo lacerata

Y boliau brith nôl yng Nghymru

Mae tair rhywogaeth o foliau brith – sef cennau fforestydd glaw hynod o brin - yn tyfu ym Mhrydain. Mae dwy ohonynt ar ymyl gogleddol eu dosbarthiad byd eang a'r trydydd yn un o'r cennau prinnaf, sydd ond yn tyfu ar ddyrnaid o safleoedd yng ngorllewin Prydain, Madeira a'r Azores. Ni allant dyfu mewn llefydd asidaidd a gall llygredd sylffwr deuocsid eu difa.

Cafwyd hyd i'r tair rhywogaeth eto yn Abergwynant, lle roedd cofnodion hanesyddol ar eu cyfer. Dwy ohonynt ar greigiau folcanaidd a'r brinnaf ar goeden onnen braff lle roedd y canopi yn ei gwarchod rhag dylanwad glaw asid. Anodd credu eu bod wedi goroesi – bu bron i goeden grafu un oddi ar ei chraig wrth syrthio, ac mae un arall mewn sgri sy'n llawn llwybrau cerdded a sbwriel. Ac mae'n wyrth bod coeden wedi dal gafael ar lethr mor serth. Bydd angen help arnynt i'w harbed rhag damweiniau a'u cynnal tra'n bod ni'n creu cenhedlaeth o goed hynafol newydd ar eu cyfer.

photographing the screes we set off south into the ash woods of Hafod y Llan. The rocks were tantalisingly just about basic enough for cyanobacterial lichens, but supported little of note. Just as light began to fade a magnificent stand of maiden ash trees was located – some of the largest I have ever seen in Wales. There on the trunks of three trees was the Intricate Specklebelly. As trees age, their bark becomes less acidic and the spread of the crown tends to shed some rain that otherwise would have acidified the bark.

Elation quickly turned to concern. With such tiny populations did they really have a future? Stochastic (otherwise known as "I don't believe it!") events could easily carry them away. The Norwegian Specklebelly had just escaped being scraped off its rock by a falling tree. The Lacerate Specklebelly was on a block scree threaded through with paths and littered with old drinks tins from an adjoining campsite, and how such large ash trees remained upright on such a steep scree slope was beyond belief. But somehow they do seem to survive – just. Acid rain is still the main threat to this group of lichens, a threat we have somehow contrived to forget about in the midst of our concern over global warming.

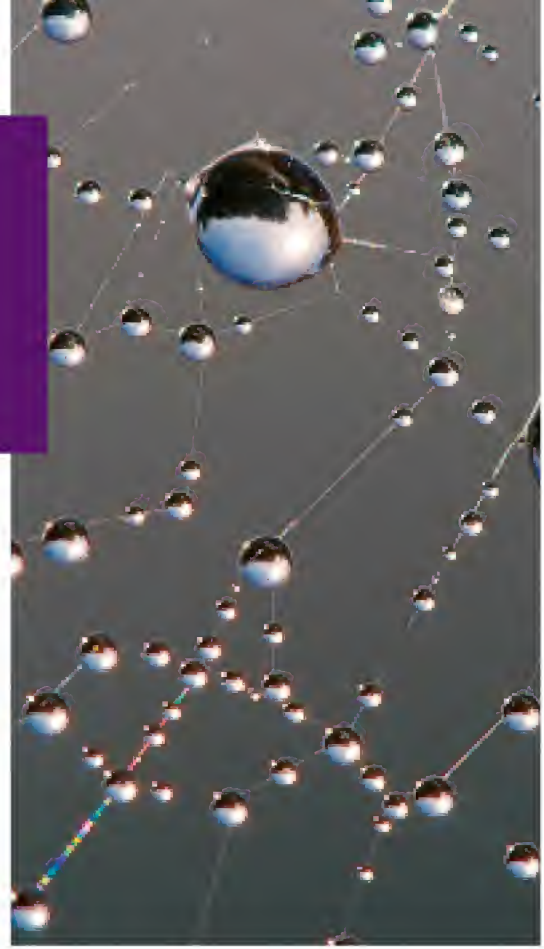
A very close watch now needs to be kept on the sites and the help of all the owners and users of these areas sought. The specklebellies will undoubtedly need a helping hand should accident dislodge them. Our past management has robbed them of the ancient trees they evolved to occupy and acid rain has further limited their rock and tree habitats. Hopefully we can now begin the long haul necessary to reduce acid rain and encourage the growth of new generations of ancient trees. They just have to "hold on in there" as our American cousins would say and yes, specklebelly is a good American name!

***Ray Woods** is* Plantlife's *Lower Plants Champion.*

Liz Fleming-Williams

Ray Woods in Nant Gwynant

Natural Environment Framework -
opportunity or threat?



Luc Viatour GNUFDL www.lucnix.be

In the light of failed biodiversity targets, few would argue that environmental policy in Wales and its institutions could not be made more effective and better integrated across Government and all sectors. With the publication of the Consultation Document A Living Wales, *we have a chance to comment on a new framework for the Welsh environment. We should seize that opportunity, argues* **MIKE ALEXANDER**, *and help shape the document to fully reflect the importance of conservation values and achievements.*

This is 2010, the International Year of Biodiversity, but do we have reason to celebrate? One of the key sustainable development challenges of the 2006 Welsh Environment Strategy has failed. We are not taking a 'truly integrated' approach to the management of our environment. Wales is not alone in this: biodiversity targets have not been met in Europe or globally. So, from the global perspective there is certainly nothing to celebrate, but in Wales there may be reason for hope. The Welsh Assembly Government (WAG) has taken these failures very seriously. At the Wales Biodiversity Partnership meeting in September, Jane Davidson, Minister for Environment, Sustainability and Housing, announced the development of a Natural Environment Framework (NEF) and launched a consultative document. Its full title is *A Living Wales – a new framework for our environment, our countryside and our seas.*

This is an opportunity for everyone with an interest in our natural environment take part in the debate, with responses invited by 31 December 2010. Members of NATUR (the Welsh Institute of Countryside and Conservation Management) and invited experts met to discuss NEF and prepare a response. This article is a brief account of our meeting. We hope that we have identified the most important issues and that, above all, this article will encourage you to respond to the consultation.

NATUR is delighted that WAG gives such high priority to our environment and to our failure to meet biodiversity targets, and we fully support the key elements expressed in the consultation and the background documents. We welcome the strong ministerial support and hope that we will soon see evidence that all government sectors and private sectors accept the framework.

Mike Alexander

The development of the framework has the potential to place Wales at the forefront of a global commitment to tackling climate change and the loss of biodiversity. Wales could become a world leader, establishing exemplary standards. We are delighted that NEF recognises the outstanding environment, landscape and wildlife that we have inherited, and offers an opportunity to build on these foundations and invigorate the process of environmental management and safeguard.

As a consultation document, intended to stimulate debate, it inevitably contains a degree of ambiguity, and because the supporting literature has evolved through a process of discussion it is occasionally contradictory. This is all part of a necessary process, but it is essential that we discuss these differences to ensure that we have a clear understanding of the implications of NEF. At the end of this we need an unequivocal statement of our future direction. If we fail to achieve this, something that was initiated with the intention of strengthening conservation in Wales could have exactly the opposite effect.

Points at issue

NATUR members have some general concerns. Firstly, it seems that six months is an extremely ambitious timescale for the development of such a critical framework. Would it not be better to take more time to get everything right? We believe that the five workstreams identified by NEF, rather than being dealt with simultaneously, should progress in a logical sequence, building on the outputs from earlier workstreams. At this stage, it seems premature to be 'refreshing institutional arrangements', before we have established our national priorities and have some understanding of the new role or functionality that the institutions will have to fulfil.

Unfortunately, the development of NEF coincides with a global financial downturn. One of our major concerns is that the issue of resources has not been included in the consultation document, and it is not clear how far NEF is being driven by financial issues. It would be completely unrealistic to expect anything other than a significant decrease in finance, but we believe that the resources required to deliver the framework will be considerably more than those currently available. NEF should be an opportunity to redirect resources to the most effective approaches for safe-guarding our environment and consolidating some of the existing, highly effective approaches.

It is difficult to see how it will be possible to implement some aspects of the framework within the context of current UK and European policy and legislation. With biodiversity targets not being met across the whole of Europe, we need to enhance coordination and cooperation at a European scale, as emphasised by Janez Potočnik, EC Environment Commissioner, at the launch of NEF in September 2010. We therefore have serious concerns about the consequences of Wales developing its own interpretation of UK and European legislation. This could impede our ability to report consistently from a UK perspective, and undermine efforts to address the Welsh impact of UK- and Europe-wide pressures on biodiversity. Problems are already developing in marine conservation zone legislation where there are significant differences of approach between England and Wales.

Some issues are not fully explored within the framework. Can we assume that sufficient attention will be given to, for example, access, recreation and education in the countryside and marine environment? The urban and post-industrial environment is not mentioned: will the framework take sufficient account of our cultural and historic inheritance? Will it consider population demography and the potential for greater demands on our environment?

In the Environment Strategy for Wales, WAG gives an

unequivocal commitment to the precautionary principle, but it is not mentioned in the consultation document. We believe that this principle should be central to the framework.

The biodiversity targets

Why have we failed to meet our biodiversity targets (95% of European sites in favourable condition by 2010)? Have all sectors of society failed, or is it simply our conservation measures that have failed? In talking only in terms of failure, we are in danger of forgetting everything that has been achieved over the last 60 years. A visit to any one of our National Parks almost shouts the scale of that achievement. The nature reserves and other protected places shine out from our rural landscapes. These are the places that define our landscape, that define Wales: they are the testament to our success. We may not have enough empirical evidence but we have our senses: when we look outside the protected areas we can see the difference.

We have been modifying the environment that we live in for a very long time. To return some habitats and populations to a point where they are considered 'favourable' requires restoration to a more natural condition. It is not realistic to expect that we can undo the impact of generations in little more than a decade. Much of what we now value is the incidental by-product of generations of Welsh people striving to survive and make a living on the land, but the traditional management, which delivered so much of our valued semi-natural countryside, is no longer economically viable. To restore and protect these sites we need to regain lost skills, develop new skills, and find ways to re-establish abandoned grazing. All of this takes time, but the target did not give us that time. We needed the resources, which were not available, and we needed a commitment from all sectors of society, which we did not always receive. Perhaps we should not say that we have failed, but that we have not yet succeeded.

Ecosystem services

We welcome the introduction of ecosystem services as a powerful argument to support biodiversity conservation. However, if the value of these services becomes the only way in which we can measure or value ecosystems then all our good intentions will fail. The value of ecosystem services should never become a surrogate measure of biodiversity. The only measure of biodiversity is life itself: the variety of species, communities and habitats.

It is wrong to believe that if ecosystems are delivering the desired services then biodiversity will be conserved. In reality, a seriously depleted ecosystem, that fails to meet its biodiversity potential, and with many rare and endangered species absent, can provide valuable, but not necessarily sustainable, ecosystem services.

We should recognise that all life is valuable, irrespective of its utility, and that all life, including that of our own species, is interdependent. We cannot simply choose to save those things that seem to important to us here and now, because values change throughout history. Something that has no recognisable value today may be extremely important tomorrow. One of the dangers of placing an emphasis on ecosystem services is that it can reverse the generally accepted priorities of conservation. It tends to ask what the ecosystem can do for us, rather than what we can do for the ecosystem.

There is a powerful argument for the need to value nature both for what it is and for what it provides for us. We hope that NEF accepts this need to unite ecosystem services with intrinsic values.

The ecosystem approach

Many of the core principles of an ecosystem approach have been applied to conservation in Wales for a long time. NATUR is generally supportive of its introduction, but we believe that there must be a very close examination of its full implications before it is finally adopted. The benefits are that an ecosystem approach ensures that no single component of a system is treated in isolation. Integration can facilitate a much more strategic approach to tackling the factors that influence biodiversity and help prioritise the effective and efficient use of resources. In taking

this approach it is essential that biodiversity conservation is not seen as a secondary objective in comparison to other land uses.

It is crucial that the framework recognises that an ecosystem approach does not mean abandoning the established tried and tested methods of conservation. It is about widening our current perspective, not changing it completely. We still need to designate and manage protected areas, and we still need to target priority species and habitats. These ideas have already been considered in depth in the recently published, *Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network* (the Lawton report). This report emphasises the need to improve the quality of current sites, increase the size of current sites, enhance connections between sites, and create new sites.

The most frequently heard comment when NEF is discussed has something to do with babies and bathwater. We are concerned that, in the creation of a large new agency with a broad remit, the quieter voice of conservation will go unheard. As competing priorities jostle for position, our core conservation values may be diluted, leaving the status of habitats and species at risk.

Some of the more recent developments in conservation and countryside management have not been fully recognised in NEF. The Welsh living landscape is managed by an extremely experienced workforce, and we hope that in developing this framework WAG will call on this wealth of expertise and knowledge to help ensure that NEF properly reflects the Assembly's desire to place environmental issues at the heart of government. Here in Wales we have an opportunity to establish something truly innovative, something that will protect our environment and prevent further losses to biodiversity. If we can achieve this, it will be something that we can all be proud of.

***Mike Alexander** is Executive Director of NATUR. See NATUR's full response to the consultation on the News Page www.natur.eu.com*

Cymru Fyw – NATUR yn ymateb

Mae NATUR (Sefydliad Rheolaeth Cefn Gwlad a Chadwraeth Cymru) yn paratoi ymateb i ymgynghoriad 'Cymru Fyw' y Llywodraeth, sy'n anelu at greu Fframwaith newydd ar gyfer Amgylchedd Cymru. Nodwyd anghysonderau a gwendidau yn y ddogfen drafod; rhaid unioni'r rhain os am sicrhau na fydd mabwysiadu fframwaith newydd yn gwanhau cadwraeth natur. Ymhlith pryderon NATUR mae amserlen gor-uchelgeisiol yr ymgynghoriad, y rhuthro i drafod sefydliad newydd cyn penderfynu ar yr hyn sydd ei angen at y dyfodol, diffyg trefn resymegol ar gyfer y ffrydiau gwaith allweddol a grëwyd fel rhan o'r ymgynghoriad ac absenoldeb yr Egwyddor Rhagofal fel egwyddor ganolog i'r Fframwaith. Nid oes cyfeiriad chwaith at adnoddau, na sylw digonol wedi ei roi i'r angen i gydweithio ar draws Ewrop a dehongli deddfwriaeth a pholisi mewn ffordd unedig. A wnaiff y Fframwaith roi sylw dyledus i fynediad, addysg, amgylchedd trefol ac ôl-ddiwydiannol, treftadaeth ddiwylliannol a hanesyddol? Nid oes sôn am y rhain, nac am effaith newidiadau demograffeg ar ein hamgylchedd naturiol.

Croesewir y defnydd o gysyniad 'gwasanaethau ecosystemau' i helpu gwarchod bywyd gwyllt. Ond nid drwy hyn yn unig y mesurir bioamrywiaeth. Yn wir gall ecosystemau tlodaidd barhau i ddarparu gwasanaethau gwerthfawr – er, efallai, ond yn y tymor byr. Mae bywyd yn werthfawr yn ei hanfod, nid dim ond oherwydd ei ddefnyddioldeb i ddyn – ac mae pob ffurf ar fywyd yn rhyngddibynnol. Rhaid cofio bod gwerthoedd yn newid yn gyson. Rhaid gochel, wrth bwysleisio gwasanaethau ecosystemau, nad ydym yn chwalu blaenoriaethau cadwraeth. Perygl y cysyniad yw ei fod yn pwysleisio'r hyn gall ecosystemau eu cynnig i ni, nid hyn gallwn ni wneud er eu lles nhw. Rhaid uno cysyniad gwasnaethau ecosystem gyda'r egwyddor o werth hanfodol byd natur. Rhaid ystyried goblygiadau'r 'dull ecosystem' o weithio hefyd. Gall integreiddio ystyriaethau gwahanol greu ffordd strategol i daclo ffactorau sy'n dylanwadu ar fioamrywiaeth, ond rhaid peidio gweld cadwraeth fel amcan eilradd. Wrth fabwysiadu cysyniadau a dulliau newydd o weithio rhaid cofio'r hyn a gyflawnwyd yn y gorffennol – ac adeiladu ar hyn gan ehangu ac addasu perspectifs presennol, a gweithio o fewn a thu hwnt i ardaloedd gwarchodedig.

Green **Bookshelf**

Flora of Cardiganshire

AO Chater, with contributions by DE Allen, CD Preston and PA Smith. Published by AO Chater. Hardback £40.

This book can only be described as a monumental work and must be one of the most remarkable floras produced to date. It is the culmination of some 30 years of detailed study and recording of the flora of the vice-county of Cardiganshire, which is essentially the same as the present county of Ceredigion. The author, Arthur Chater, has been the BSBI County Recorder since 1977, and is one of the most eminent botanists and field naturalists in Britain today. The flora supercedes that of Prof J H Salter, *Flowering Plants and Ferns of Cardiganshire*, published in 1935. Salter, who died in 1942, was the first Professor of Botany at Aberystwyth University (1899-1903). He left many detailed diaries, which have greatly helped the new work to portray the floral changes that have taken place since his botanising days.

This breathtaking book runs to 930 pages of A4 size. The level of detail and the scholarly nature of the work is quite amazing, and it is difficult to imagine how one person could have recorded, absorbed and processed such a mass of information, even in 30 years. In addition to the all-important species accounts themselves, there are no less than 12 fascinating introductory chapters covering 181 pages. These chapters add immensely to the interest and enjoyment of the book, and provide a most valuable background to the floral detail portrayed later on. The second such chapter, covering the history of recording and relevant research and surveys, gives a wonderful illustrated insight into the lives and achievements of the many people who have gradually built up our knowledge of the county's flora since the mid 1500s. It comes as no surprise that several pages record in some detail the life and work of Prof Salter. Other topics covered by these chapters include conservation; geology and soils; climate and weather; the county's varied plant habitats; phytogeographical and ecological relationships of native species; and extinct, declining and increasing species. A novel feature of the flora is its special coverage of trees, including pictures of many of the county's largest and most notable specimens, and an appendix giving maximum dimensions, growth rates and altitude limits.

The front cover has a delightful photograph of a BSBI field meeting on the Cors Caron National Nature Reserve in 2002, this being a foretaste of the wealth of colour photographs scattered throughout the book, both in the introductory chapters and in the species accounts. These range from images of various personalities to pictures of sites, habitats and individual species – sometimes portraying unusual or quaint situations, such as *Agrostis capillaris* flowering on top of a fencepost at Llanddewi-brefi. The pictures have been beautifully and carefully selected and they supplement the text in a most attractive way.

To quote from the back cover of the book, "the species accounts give particular emphasis to variation and cover many infraspecific taxa, hybrids and critical groups", and this they certainly do with great expertise and in a very readable manner. A nice touch is the inclusion of the charming Welsh names of species wherever possible. Except for particularly rare species, each entry has an informative tetrad map showing distribution and indicating whether the species is native, alien (naturalised, casual or self-sown) or planted, with records allotted by different symbols to three time periods – pre-1970, 1970-1986 and 1987-2009. The sheer wealth of detail in these accounts, accompanied by frequent illustrations, demonstrates vividly the author's encyclopaedic knowledge of the county's flora. The accounts are a huge advance on those of Salter, which consisted of just a few lines and a list of localities for each species, but nevertheless based on pioneering work at that time.

Such books as this do not come cheap, but at £40 this flora is remarkable value – being just 4.3 pence for each information-packed page! I would describe it as a 'must have' treasure trove of information for anyone with more than a passing interest in the flora of Cardiganshire.

Chris Fuller

Green **Bookshelf**

The Practical Islander: R. M. Lockley in his own words
Edited by Jen Llywelyn
Gwasg Carreg Gwalch 2010
£8.50

Ronald Lockley wrote or contributed to over 50 books. His intense interest in the natural world, in birds and flowers and islands and farming, gave him the material for this prodigious output. He managed to translate that passion for being outside in wild places in fresh air, open to nature, senses alive to the life around him, into words. His acute powers of observation meant that he observed the cacophony of life around him, where others saw nothing; he could then find the words to convey that observation, and the excitement it stirred in him. This, along with the accompanying autobiographical and story-telling quality of the writing, explains the appeal of his books; that appeal explains why publishers continued to publish them.

Jen Llywelyn has sown together some of the brightest passages from half a dozen books which tell a coherent story of his pursuit and realisation of an island dream. She edits together the text with great skill, the effect being to lose none of the reflection and individualism in Lockley's writing, but to give it a raised tempo, each passage a delight in itself but also a contribution to a briskly unfolding story. Her introduction, together with a foreword by Lockley's daughter Ann, sets the scene.

The context for this selection of Lockley's writing, which was written between 1930 and the late 1940s, includes the relatively robust condition of nature, the relatively desperate state of farming and wartime exigencies. Unsurprisingly, his social observations, particularly about farming, are dated, and perhaps naïve. He was a controversial figure in Pembrokeshire at one time, and no doubt the attraction of islands for him included an escape from society. Yet it is striking how fresh much of the writing remains. Jen Llywelyn has been astute in her selection; the writing here simply sparkles.

The Practical Islander should introduce a new generation to Lockley's very particular vision, as well as providing those familiar with his books with a reason to take another deep draught from the well.

James Robertson

Self Sufficiency: A practical Guide for Modern Living
Liz Wright
Gaia Books, London, 2010
£20.00

I came across this book at Hay Festival, where its author was answering questions on self-sufficiency, most of which dealt with nuts and bolts issues. This is exactly what the book does; it is down to earth. The subtitle gets the point across – this is the stuff of life, a guide to green living. Liz herself is at pains to avoid promoting too narrow, dogmatic a version of self-sufficiency. Her breadth of understanding of the issues at the heart of living more lightly and 'sustainably' is drawn from her work in Africa; no reason, then, to be surprised at the inclusion of a panel of information on 'Down to Earth Cuba'.

This nicely sets the context for what is a mine of practical information. The bulk of the 320 pages is packed with information to help anyone wanting a greater sense of self-reliance in their lives; this is surely most of us, given the shallowness of the consumer experience. As well as familiar (to me at least) subjects like vegetable growing, composting and poultry-keeping, are less well-covered ones, such as cleaning the home, making candles and soap, weaving, spinning and dyeing. There is a chapter on working with wildlife, and a section on food from the wild. While I would have welcomed more about managing land for nature, there is so much information to fit in that it is inevitable that some aspects have to be signposted rather than covered in detail.

Liz Wright believes strongly that you don't have to have acres of land to be more self-sufficient; and she warns against over-ambition when you get started. The hallmark of this book is its common-sense approach. Don't get carried away by self-sufficient dreams, which may end in failure. Be realistic in what you take on. Even if you only tackle a couple of the subjects in this book, you'll live a more connected life, with all the satisfactions that brings.

James Robertson

Silff Lyfrau Amgylcheddol

Birdsong
Kim Atkinson and Noëlle Griffiths
Hafod Press 2010, Hardback £750

Last winter on a walk I came across a pair of artists sitting alert in the woods. On greeting them I was promptly shushed to be quiet until they finished their half-hour sound sample. Each season, in the Vale of Ffestiniog and at Aberdaron, Noelle Griffiths and Kim Atkinson conducted a survey making notes, drawing and painting the sounds they heard. The finished product is a metre wide book, called Birdsong, in which the calls of various birds are represented by a series of marks or squiggles. No words can do this justice, it has to be seen, and a copy is available at the National Library of Wales.

A further nine copies have been produced and if you are thinking of a Christmas gift, be aware there is no missing decimal point in the purchase price!

Kim Atkinson has previously provided artwork for the front cover of Natur Cymru.

Huw Jenkins

Gardening for Butterflies, Bees and Other Beneficial Insects: A How-To Guide

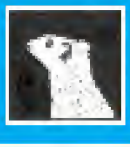
Jan Miller-Klein
Saith Ffynnon Books 2010
£19.95

This most attractively presented book delivers a wealth of information for both the wildlife enthusiast, always willing to learn more, and for the keen gardener who wants to be more environmentally friendly. The book is richly illustrated throughout with a range of large colour photographs and clear diagrams giving practical tips on creating flower beds and borders that are nectar-rich throughout the year. The large typeface is easy to read and the text clear to understand whilst not departing from the need to impart technical information in good plain English. The insights into the wonders of many of our small garden insects will be enough to encourage the reader to investigate the more obscure world of the creatures that we dismiss at our peril. There is help to identify the 'good guys' and clear reasons as to why we should not only tolerate these animals but do our best to positively encourage them in the garden.

The book clearly links which plants are beneficial for which insect and highlights the importance of recognising the caterpillars of our more common butterflies and moths. It is useful to know that different plant species are needed at the larval stages in these animals' lives. We have our eyes opened to the value of small patches of wild habitat often found just outside our garden boundaries and we learn the value of keeping these wild patches as part of the mosaic enjoyed by the beneficial insects. Hedgerows, field edges and derelict (brownfield) land are all part of the jigsaw and we should try and defend these areas where possible.

For the keen horticulturalist there is maybe too much emphasis on growing wildflower species and there are some mildly irritating inconsistencies and inaccuracies in naming plants. I would have liked to have seen listed a much wider range of suitable garden plant cultivars as many of these are great sources of nectar but undoubtedly growing some native species in our gardens is a good thing. This book helps us to make those balancing act decisions. Many examples in this book come from Wales and overall this enhances the relevance of the book for Welsh readers and it should be a recommended read.

Anne Brenchley



Nature at large

Mammal News

Readers of *Natur Cymru* (Issue 31) will know of efforts made by the Wildlife Trust of South and West Wales (WTSWW) to survey for small mammals using a new monitoring technique – artificial refugia (corrugated bitumen sheets).

A new one-year study has just begun on WTSWW's Parc Slip Nature Reserve, Bridgend, where 125 sets of refugia, each containing one 100cm x 100cm sheet and four 50cm x 50cm sheets (625 sheets in total) have been placed in various habitats on the reserve.

The survey is hoping to determine whether artificial refugia can be used as a small mammal survey technique complementary to traditional methods, such as trapping, which can often be expensive, and stressful to the animals. In addition the survey will ascertain whether smaller sheets are as productive as larger sheets.

Although only six weeks into the survey, there have already been over 280 sightings of small mammals under the refugia, including all three shrew species, field vole, bank vole and wood mouse.

The **dormouse distribution** map in Wales was altered dramatically earlier this year, when a dormouse-opened hazel nut was discovered north of Lampeter, Ceredigion – a county previously thought to be more or less devoid of the species.

As a consequence WTSWW have focused their attention on other areas of Wales also thought to be dormouse-free, undertaking a widespread study of woodlands in the Vale of Glamorgan. Despite suitable habitat and connectivity, the last confirmed dormouse record was from the late1970s.

In Carmarthenshire, WTSWW has been able to map connectivity of dormouse habitat adjacent to their Rhos Cefn Bryn Nature Reserve. It is hoped that by identifying gaps in connectivity, conservation efforts can be directed to areas where they are most needed.

In 2009-10 the **National Otter Survey of Wales** produced a record-breaking number of positive otter sites. At the Loughor hydrometric area in West Wales (covering the Tawe and Loughor catchments) all 50 sites returned a positive result. This 100% return is a first in Welsh National Otter Surveys.

Following my plea for records of **stoat in ermine**, I received a few seen around Christmas 2009. Iolo Williams saw one with a touch of red-brown in Cwm Penaner near Bala, and one at Pentre Berw, while Jim Clark saw one at Newborough Forest on Anglesey. It is interesting to get records from Anglesey, which rarely gets a lasting cover of snow, and it would not seem an evolutionary advantage to be white. Perhaps as well as a temperature trigger, there is a day-length one too.

Also in north Wales, Ben Stammers and Nigel Brown noted that **hedgehogs** were rarely seen this year around Bethesda and at Treborth Botanic Garden, near Bangor, indicating at least a local decline. Nigel was lucky though to spot an otter in the kelp beds on the Menai Strait below the gardens.

While filming at South Stack in October last year, Iolo Williams saw a pod of 80 **Risso's dolphins**, including young, off Anglesey, and Ben Stammers caught sight of three off Aberffraw this August.

Also on Anglesey, a **badger** was killed on the road just north of Bryn Refail. Badgers are only generally known from the Holyhead area, with the Wildlife Trust Porth Diana reserve supporting a small group. As far as is known this is the only recent badger found south of the Amlwch area.

Two new **red squirrel** reintroductions took place this autumn near Marianglas and Mynydd Bodafon, which put this species firmly into the eastern part of Anglesey. There will be a further release in the Dingle woodlands, Llangefni in 2011. At the same time, there have been 13 roadkill red squirrel deaths since June 2009. Rob Ogden and Ross McEwing at Wildgenes are examining Anglesey genetic samples from 100 reds, with island-wide hair tube sampling about to start; so a comprehensive genetic profile for Ynys Mon is developing. Nigel Brown recorded a red squirrel at Treborth (on the mainland) in September.

Frances Cattanach is Director of North Wales Wildlife Trust

You can get out and about with mammal enthusiasts with the Snowdonia Mammal Group – see **www.snowdoniamammals.co.uk**

Islands round-up

Skokholm

Resident stays on Skokholm are confined to work party volunteers while the island Restoration Project is underway. Otherwise, visitors can go on day trips: several took place in 2010, notably a visit on June 14th for Founders – donors to the appeal which raised enough money for the island to be purchased in 2006 by the Wildlife Trust for South & West Wales.

The volunteer labour force has done a staggering amount of work this year, starting with the first visit on May 7th when Jerry Gillham (Asst Warden for Skomer and Skokholm) arrived with 6 gull-counters. Regular loads of cement, boards and other building materials arrived, and lots of accumulated rubbish has gone back to the mainland. Work parties continued throughout the summer, all well-documented on **www.skokholm.blogspot.com** Anyone interested in day trips or volunteering in 2011, or donating to the Appeal, should phone **01239 621600**.

Skomer

New Warden Chris Taylor took over from Jo Millborrow on March 1st. Interesting spring birds turned up as usual, including a hoopoe in April and a male bluethroat in May. The facilities for staying overnight are now rated 3-Star by Visit Wales, after the major development (funded by HLF, Tubney Trust and Crown Estates) which finished in 2008. The charge for visitors in the peak seabird season (May – July) is £50 per night, dropping to £20 in August and September. Phone number for bookings and volunteering information is as for Skokholm.

There is still plenty to see later in the season, including thousands of young Manx shearwaters leaving their burrows at dusk in mid-September: they clamber up to higher ground before fluttering down to the sea, en route for South America. Other news on **www.skomerisland.blogspot.com** – the first grey seal pup was born on 20th August, with over 50 by late September.

Steve Stansfield

Leach's petrel

Anglesey – The Skerries

The tern colony on this small group of islands just out from Holyhead harbour continues to grow. This year there were 2,900 pairs of Arctic terns, raising lots of chicks, and 238 pairs of common terns. This makes the Skerries home to the largest colony of Arctic terns in Britain, followed by the Farne Islands (2,200 pairs). The breeding success is also good news, after the continuing failures in most Scottish colonies. Puffins also are increasing, with over 500 burrows occupied this year. In 2008 a joint Trinity House / CCW / RSPB agreement saw the RSPB wardens move into new and upgraded accommodation. Denise Shaw wardened the islands for the sixth consecutive time this year!

Bardsey – Ynys Enlli

The island blog **www.bbfo.blogspot.com** now has fantastic pictures almost every day, thanks to the presence of several excellent bird photographers on the island. Highlights this autumn include a leatherback turtle in the Sound, seen by incoming visitors from Colin Evans' boat on 14th August. These are known to come up from the tropics into the Irish Sea but are mostly seen by fishermen. Two days later, there were around 50 Risso's dolphins in several pods off the island's west coast. Probably the most exciting day for birds this year was 15th September, when SW winds veering NW produced excellent seabird passage. A total of 72 Leach's petrels went past, along with two Sabine's gulls and all four skua species, including 39 great skuas. September 27th was another good day for cetaceans, with bottlenose, common and Risso's dolphins recorded.

Collated by **Geoff Gibbs**, with thanks to **Ian Sims** for the Skerries information.

Ancient green Wales

Wales is renowned for its green landscapes, lush with vegetation nurtured by the moist winds from the Atlantic, but it has not always been so. In various earlier times it was covered by ice and tundra, hot deserts, and even drowned by warm subtropical seas. There was one other time, however, when the Welsh landscape was green and densely vegetated – about 300 million years ago, during the Carboniferous Period.

This ancient Welsh landscape was quite different from what we see today. Over millions of years continental drift has caused Wales to slowly move north and in Carboniferous times it was in tropical latitudes. Mountains lay to the north and south of Britain, but inbetween there were wetlands called the coal swamps. There were few land animals other than insects and arachnids. Vegetation was also quite different, with no flowering plants (these did not evolve for another 200 million years). These tropical wetlands were instead mainly dominated by plants such as ferns and horsetails, and most significantly giant club mosses.

These large club mosses had an unusual biology, making the coal swamps a strange and special habitat. Their rooting structures were perfectly adapted to growth in waterlogged conditions and were the only plants that could really flourish in the wettest parts of the swamps. Many could grow up to 50 metres tall but the main stem ('trunk') had very little wood – mostly it consisted of bark-like tissue called periderm. This tissue could grow very quickly, allowing the plants to reach their full height in as little as 25 years. We also know from their anatomy that these plants would die soon after they had reached their fully mature size and had reproduced. For most of their life, there was just the upright stem covered with small leaves, and only towards the end was a terminal crown of branches produced. Consequently, unlike modern tropical rain forests, which tend to be rather dark habitats, the coal swamps would have been relatively open, light places.

Ben Evans - Amgueddfa Cymru/NMW

Fossilised bark from the South Wales Coal Measures. Main stem of Lepidodendron aculeatum Sternberg main stem showing the diamond shaped cushions (approx 10 cm long) where leaves were originally attached.

Annette Townsend - Amgueddfa Cymru/NMW

Giant club mosses. Reconstruction of the wettest part of the coal swamps

Their fast, determinate growth meant that the giant club mosses generated enormous quantities of peat. This peat has since changed into the coal that has so strongly moulded the economy and culture of Wales. It also extracted large quantities of carbon dioxide from the atmosphere, which partly explains why late Carboniferous climates tended to be relatively cool. This interaction between Carboniferous tropical vegetation, atmosphere and climate is attracting increasing attention from scientists as it is helping to give insights into similar processes happening today. Scientists from Amgueddfa Cymru - National Museum of Wales have been at the forefront of a number of international research programmes in this field under the auspices of UNESCO and the NATO Science Programme.

Christopher J. Cleal is Head of Vegetation History, Amgueddfa Cymru – National Museum Wales.

Woods and forests

Increasing the diversity of trees in our forests

Playing the long game is not an excuse for inertia when you're dealing with woodlands. Changing the nature and character of a woodland is necessarily a long term game: trees take many decades to mature and foresters must anticipate much further into the future than most land managers. So what is wrong with the woodlands we have?

The policies of the 20th century have restored some of Wales' lost woodland area from just 4% in 1900 to nearly 14% today: an achievement to be proud of. But this success has been accomplished largely thanks to the easily established, fast growing, amazingly productive Sitka spruce, with its seemingly ubiquitous and flexible end-uses. Over the last decade we have come to appreciate why having all the forestry eggs in one basket. The independent assessment *Combating Climate Change - a role for UK forests* (2009,known as The Read Report), identified the importance of adapting woodlands to a changing climate to address factors which include the effects on tree condition, productivity, woodland soil function, forest hydrology and also the incidence of insect pests and disease outbreaks.

If we are to adapt our existing woodlands to the expected future climate and create new woodlands which will stand the test of time, we need to take a combination of 'no regrets' diversification measures. This must include broadening the choice of genetic material, mixing tree species in stands, and varying management systems and the timing of operations (see *Natur Cymru* 29, pp 32-37). Ten years ago Forestry Commission Wales (FCW) was re-planting 5.6 million trees per year composed of 20 species, with a heavy reliance (around 98%) on conifers. In 2010 FCW will have re-planted 3.8 million trees, where one in five is broadleaved and the number of different species has risen to 33. There has been progress but there remains much to do.

One of the biggest challenges will be to push the boundaries of the exposure, soil type and climatic zone. This will mean taking calculated risks to improve the health of the overall woodland ecosystem. The diversity achieved will need to be at a scale and quality that can be well managed and will provide a range of benefits.

FCW has produced guidance to help woodland owners and managers in the choice of up to 60 species with potential for planting in Wales. With ConFor (Confederation of Forest Industries), FCW has run workshops and staff have attended sessions to embed new guidance and systems. Ben Law recently published an article ('Transition Trees', *Permaculture Magazine* 65) commenting on his vision for the tree species we need to plant now for us in the future, and the list of 60 includes most of his suggestions. A renewed focus on the redwoods will be a likely consequence including Douglas Fir *Pseudotsuga menzieii*, Western Red Cedar *Thuja plicata*, Lawson Cypress *Chaemaecyparis lawsoniana* and Coast Redwood *Sequoia sempervirens*. Foresters will need to become braver in their choices and consider the potential of species such as Western White Pine *Pinus monticola*, European Silver Fir *Abies alba*, Red Oak *Quercus rubra*, Roble *Nothofagus obliqua*, Grey Alder *Alnus incana* and the service trees *Sorbus spp*. Within Ancient Woodland Sites, dare we consider species assemblages which include beech (outside of the considered native range), sycamore and sweet chestnut?

The challenge lies in how quickly this 'tree species diversity' strategy is embraced, not least to get the seed supply and nursery stocks up and running to service the demand. Prudent provenance choice and genetic conservation measures will play a big part in the success of this strategy, as will the skills which must be rediscovered or learnt afresh to cope with more difficult establishment. Doing nothing is not an option but achieving greater diversity will take time.

Michelle van-Velzen
Forestry & Environment Policy & Programme Manager, Forestry Commission Wales, 0300 0680300, michelle.van-velzen@forestry.gsi.gov.uk

Visit **www.forestry.gov.uk to read**:

- *Forests and climate change*, including The Read Report
- *Woodlands for Wales – the Welsh Assembly Government's strategy for woodlands and trees March 2009*
- *Adapting woodlands in Wales to a future climate*
- *A guide for increasing tree species diversity in Wales*

Hay on Earth

For five years the Hay Festival has been engaged in a programme of managing and mitigating its environmental impact through its Greenprint programme. Greenprint Director ***Andy Fryers*** introduces this work, and the Welsh House Project.

Over the past five years we have focused on three aspects of the Festival's environmental impact: our own direct impacts; the impacts of our audience; and the programming of events that will stimulate debate and discussion about key issues.

As part of Greenprint, we have run the Festival's Hay on Earth series in conjunction with Andy Middleton from The TYF Group. This year's series focused on finding and developing community-led projects that were delivering sustainable solutions to climate change challenges. After an open competition, each day culminated in a 'Green Dragon's Den' where the public and a panel of experts voted for the best project. The winning project received £10,000 from the Welsh Assembly Government.

There were four winning projects: SEED Homes was one of them. Edward Bulmer of SEED Homes tells the story of what happened when they won, and the technical improvements which are making it possible to build houses which are affordable and sustainable.

The Welsh House Project

We have had an amazing time since winning Green Dragon funding at Hay on Earth. The finance has enabled a detailed reappraisal of our building system, but the award also seems to have given us credibility and we have been helped by some highly capable and influential people as a result.

We gained overwhelming support from the public for our commitment to building houses that will revitalise communities by providing homes for mixed ages and incomes. Even before the recession the market was not doing this, because house building was dependent on the business models of house builders and mortgage lenders. We believe in a system that provides 'houses for need not greed'.

The system we have developed can already build 'affordably' at Level 4 of the Code for Sustainable Homes (CSH). Our winning project was designed to make the house more sustainable but cheaper. Sustainability and affordability do not come across as natural bedfellows, as we see more and more 'eco homes' being built or showcased with £0.5-£1m price tags. We think they are necessarily two sides of the same coin – a sustainable home is cheap to run, ergo it is an affordable home.

We have taken all the areas where we lost points in the CSH assessment and reviewed our design and process to see if we can win points back. We have been lucky enough to attract the help of one the Code's chief architects, Colin King, who has been responsible for establishing the Code in Wales. He has provided wise counsel and has enabled BRE (Building Research Establishment) assessment of key elements of the design. We have also received input and support from the Graduate School of the Environment at the Centre for Alternative Technology (CAT), headed by Simon Tucker, and a new 'friend' Andrew Bronwyn, chair of Wood Knowledge Wales, who has got behind our emphasis on the use of managed forestry to produce the most sustainable building materials. Our house uses nearly 10 tonnes of wood, but this can be quick grown soft wood such as spruce, because our system is based on a factory-made structural panel.

So far we have made progress on all our project objectives. This has meant a solution to cold bridging issues and the development of a mass concrete base to act as a heat sink for the house. We have designed an intelligent window that provides passive cooling and heat retention that is now being assessed by the BRE. We have perfected our sole plate details and made a number of process efficiency improvements, most importantly increasing the factory-made components, delivering reduced cost and less waste. An increase in insulation and air tightness will improve thermal efficiency, and modification of the panel boarding will allow a streamlined building process and further cost saving.

This part of the project will close in the coming months. We are confident that it will enable the creation of 2-3 bedroom houses that actually absorb CO_2 and that can be sold for under £100,000.

***Edward Bulmer**, SEED Homes*
www.seedhomes.co.uk

Letters Llythyrau

It has always been *Natur Cymru*'s aim to promote the exchange of information about biodiversity and so by popular request we are introducing a letters page. Please mark any letters or emails 'Letters page'. Letters may be edited.

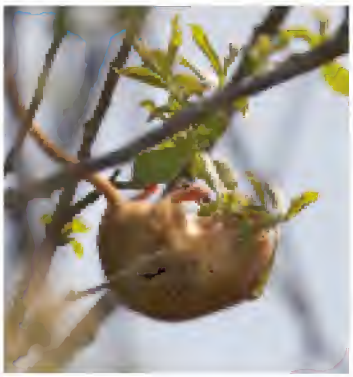
Mae hybu rhannu gwybodaeth am fioamrywiaeth wedi bod yn nod gan Natur Cymru bob amser. Felly, yn dilyn nifer o geisiadau, rydym am gyflwyno tudalen lythyrau. Nodwch 'Tudalen lythyrau' ar unrhyw lythyrau neu negeseuon e-bost os gwelwch yn dda. Fe all llythyrau gael eu golygu.

In defence of mountains

Rob Collister's impassioned plea for unfenced mountain landscapes (*Taking Offence* NC 36 pp8-9) challenges our perception of these areas. He notes "natural beauty" should exclude such angular incursions into this rugged environment. Did our forebears never say the same about drystone walls? Are 10 million sheep part of this natural beauty? Perverse agricultural subsidies contributed to the problem, as do our living standards. Flocks are larger, farmers older, labour expensive and almost no-one shepherds the hills on foot.

We all have a vision of the mountains. But is it a vision of today, from childhood memories, an idealised form that we have seen elsewhere, or perhaps some future construct? Do we want the ranched landscape of today, the burnt patchwork grouse-moors of the 19th century or some primeval woodland? Many ecologists see the Welsh mountains as impoverished landscapes, denuded of much of their natural vegetation by years of overgrazing. Biodiversity clings to them largely despite rather than because of our management. There is a vision of a richer landscape, in which pasture, heath, cliff, bog, woodland and scrub co-exist. We cannot achieve this quickly; many have tried for decades, fighting the tide of the Common Agricultural Policy and farm economics. Meanwhile, as Rob concedes, we reluctantly use fencing to protect and restore the remnants of our upland vegetation. It is the last resort, not one that we welcome and hopefully temporary, but opponents to fencing must recognise the bigger picture that is our upland ecosystem.

John Ratcliffe



Maria Wagland

Dormice don't read!

As Conservation Officer for the Montgomeryshire Wildlife Trust, I often find myself talking to people about wildlife and it is not unusual for me to mention animals' inability to read! Dormice have often been the subject of choice this year, so I was interested to read the recent article entitled 'Dormice don't read books!' (*Natur Cymru* 36).

The Montgomeryshire Wildlife Trust's Cors Dyfi Nature Reserve is a restored wetland near Machynlleth. This reserve used to be covered in conifers until 1997, when it was clear felled and ditch-blocked in order to re-wet the site. Today, Cors Dyfi is a fantastic bog with areas of willow scrub which support a wealth of wildlife including common lizards, nightjar and otters.

One species we did not expect to find at Cors Dyfi were dormice, so you can imagine our surprise when one was found underneath a large stone slab in February 2009. After getting over the initial shock, we thought it most likely that the dormice were using the more continuous wet woodland/scrub round the edge of the site and vowed to find out more.

At the end of May this year, one dormouse decided to show us exactly what he thought about books! In an isolated clump of willow in the middle of the bog, this dormouse spent some time foraging in broad daylight, as this photo (taken at 3.30pm) testifies! Not only was this a 'diurnal bog dormouse', it wasn't afraid of the crowds either; it continued to delight our staff and visitors, making an appearance on several occasions.

We would love to know more about the dormice at Cors Dyfi, so, if anyone wants to study some really 'illiterate' dormice, then give us a call!

Tammy Stretton,
Montgomeryshire Wildlife Trust
01938 555 654

Hysbysfwrdd / Noticeboard

If you would like your wildlife event to feature on these pages please contact us on 01248 387373 or email info@naturcymru.org.uk (entries may be edited). Please mention Natur Cymru if you attend any of these events.

School of Education and Lifelong Learning, Aberystwyth

COURSES

28-30 Jan *Permaculture in 3 Days.* Over the Rainbow, Tanygroes, Ceredigion

4-6 Mar *Permaculture in 3 Days.* CAT, Machynlleth

11-13 Mar *Ecology - An Introduction.* CAT, Machynlleth

25-27 Mar *Identifying Mosses, Liverworts & Lichens.* CAT, Machynlleth

Contact: **learning@aber.ac.uk**
01970 621580 www.aber.ac.uk/sell

Coppicewood College, Pembrokeshire

COURSES

14-17 Chwef / Feb *Hedgelaying*
14 Maw / Mar *Green Woodworking*
www.coppicewoodcollege.co.uk
01239 881394
coppicewood01@aol.com

DACE, Prifysgol Swansea University

COURSES

18 Ion/Jan *Habitats of Wales* 10 wythnos / weeks
www.swan.ac.uk/dace
01792 602211
adult.education@swansea.ac.uk

Busybees

COURSES

12 Feb *Living Willow workshop*
5-6 Mar, 14-15 May *Growing Vegetables Successfully*
12-13 Mar *Everything you need to know about growing Fruit!*
27 Mar, 2 Apr, 7 May, 20 May *Introduction to Beekeeping*
3 Pen y Bonc, Cyttir Lane, Bangor, Gwynedd, LL57 4DB.
www.foodskillsforall.co.uk
busybees@cooptel.net
01248 361 576

Borderlines

FILM FESTIVAL

Seeks entries for British natural world documentary awards
25 Mar-10 Apr in venues throughout Herefordshire and Shropshire.
www.borderlinesfilmfestival.org/under-open-skies.shtml

Cardiff Centre for Lifelong Learning

CWRSIAU RHAN AMSER
PART TIME COURSES

17 Ion/Jan *Birds of Sea and Coast.* 4 wythnos / weeks
20 Ion/Jan *Water, Wind and Waves - How the Sea Works.* 10 wythnos / weeks
23 Ion/Jan-20 Maw/Mar *Birds of Coast, Estuary and Sea*
24 Ion/Jan-21 Maw/Mar *Birds of Gardens, Woods and Fields*
3 Chwef /Feb *Conservation Management.* 10 wythnos / weeks
www.cardiff.ac.uk/learn
029 2087 0000 learn@cardiff.ac.uk

Biodiversity Information Service for Powys and Brecon Beacons National Park (BIS)

COURSES

15 Ion/Jan *Identifying difficult moth species by dissection*
19 Chwef/Feb *Ladybird Identification*
12 Maw/Mar *Centipedes, Millipedes & Woodlice*
www.b-i-s.org
01874 610881 phil@b-i-s.org

NATUR

DIGWYDDIADAU / EVENTS

Members: free (£25 refundable deposit)
Non-members: £70 unless otherwise stated.
The fee includes lunch, refreshments and course resources.

12 Feb *Maximizing learning in the Outdoor Classroom*
FSC Rhyd y Creuau, Gwynedd
March 2011 (date to be confirmed) *Introduction to shore ecology*
FSC Dale Fort, Pembrokeshire.
Aimed at staff who manage coastal reserves.
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Plas Tan y Bwlch, Canolfan Astudiaethau Amgylcheddol a Gwasanaethau Addysg / Plas Tan y Bwlch Environmental Studies Centre and Education Services

CWRSIAU/COURSES

31 Ion/Jan–3 Chwef / Feb
Trin Geiriau: Ysgrifennu am leoedd, ysgrifennu i ymwelwyr / A way with words: Writing about places, writing for visitors.
2-4 Chwef/ Feb
Mynediad i Bawb / Access for All
7-9 Chwef/Feb
Lleihau Risg – Ecosystemau a Budd Dunol yn y DU./ Reducing Risks – Ecosystems and Human Well Being in the UK.
To discuss further contact Julia Korn
01248 387350
28 Chwef / Feb–4 Maw / Mar
Mynediad a Hawliau Tramwy Cyhoeddus, Y Gyfraith a Rheolaeth / Access & PROW, Law and Management
7-9 Maw/Mar
Rhwydweithiau Cynefinoedd Coedwig – Datblygu Tirluniau Eco-Gyfeillgar Newydd / Forest Habitat Networks – Building New Wildlife Friendly Landscapes
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01766 772600 plas@eryri-npa.gov.uk

Wildlife Trusts Wales

The Wildlife Trusts offer a huge number of events and courses all over Wales. Contact them for a full programme.

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01597 823298
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www.welshwildlife.org 01656 726980 info@welshwildlife.org

Llyn Padarn

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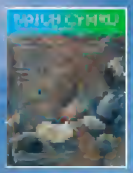

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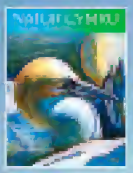

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